PRACTICAL OBSERVATIONS

ON THE

INTELLECTUAL, SANITARY, AND MEDICAL TREATMENT

OF THE

DEAF AND DUMB.

BY

HENRY SAMUEL PURDON, M.D.,

FELLOW OF THE ANTHROPOLOGICAL SOCIETY,
LONDON.

BELFAST:
PRINTED AT ADAIR'S STEAM PRINTING OFFICE,
11 & 13, ARTHUR STREET.

CONTENTS.

INTRODUCTION.

In the month of August, 1865, I published a pamphlet on the "Peculiarities of the Deaf and Dumb, which had been observed at the Ulster Institution," and from the manner in which that production has been reviewed by different journals, as well as the flattering compliments of my friends, I have been encouraged to make further enquiries on this subject, the result of which, derived both from correspondence with the medical gentlemen attached to the different institutions in these countries, and from actual observation at the Ulster Institution, I beg leave to lay before the reader in the following pages, saying with Sterne, that "the truest respect which you can pay to the reader's understanding, is to halve this matter amicably, and leave him something to imagine, in his turn, as well as yourself."

I take this opportunity of thanking the following gentlemen, most of whom are attached to the Institutions in the towns following their names, for the information that they have furnished me with :—Mr. Jas. Hawkins, London, for his work on "Tho Constitution of the Deaf and Dumb," and lotter; Mr. Parker, Bath, for his pamphlet on "Enquiry into the Causes of Deaf-Mutism;" Rev. J. Kinghan, Principal of tho Ulster Institution, Belfast, for his kindness in allowing mo

to make free use of his lectures and notes; to Dr. C. D. Purdon, Belfast; Dr. Wade, Birmingham; Dr. M'Call Anderson, Glasgow; Dr. George Hunter, Margate; Thomas Turner, Esq., F.R.C.S., Manchester; Dr. Scholfield, Doncaster; Dr. Hensley, Bath; F. J. Bailey, Esq., M.R.C.S., Liverpool; Dr. R. Dyce, Aberdeen; Mr. E. Chidley, Principal, Claremont Institution, Dublin; Mr. Hutchinson, Edinburgh; John Bird, Esq., M.R.C.S., London; Dr. W. Scott, Exeter; Mr. Hall, M.R.C.S.E., Swansea; Dr. Begg, Dundee; Dr. Eustace, Jun., Dublin; &c.

Probably before long, science will be capable of doing more satisfactorily something either towards curing or alleviating the calamity under which deaf-mutes suffer. Dr. Priestly has well remarked, "that sagacity in medicine often becomes more conspicuous in the exercise of common sense than of any of the so-called special senses; and that the pure light of science must be tinctured by no coloured rays which may disturb the mental vision." These maxims are fully borne out by those whose province it is to treat the deaf and dumb.

The education of deaf and dumb children has attracted much attention of late years, and great exertions have been made to train them towards entering on useful employment; the most efficacious plan to obtain which has been found to be bringing them together under properly-qualified instructors in institutions devoted to this purpose. Mr. Parker, of Bath, has suggested tho establishment of an hospital, both for educating and also *curing* the calamity under which deaf mutes labour.

The system of moral, intellectual, and religious training pursued in these institutions occasions these unfortunate beings to be a comfort to their parents, and happier in themselves.

"Philanthropy may not seem a brave or a logical mood, and may often consist of factitious sentiment, but, when it is wed to intellect and science, it goes deeper than industrialism and higher than materialism. It at once grows out of and caps, an individual, a nation, a race. It is so interpenetrative that it works as if by alchemy or magic; it makes even industry work against itself, and endows colleges, builds asylums, and organises noble institutions. The helpless, the insane, the blind, the deaf and dumb are set over against crowns, francs, and dollars, and what the individual yields humanity gains. The action and the reaction are thus mutual, and their synthesis constitutes what we call history."[1]

Now, congenital deafness involves dumbness, and this usually presents no visible organic defect; and the number of deaf and dumb, determined as accurately as possible, from investigations made in every quarter of the globe, both amongst savage, as well as civilised nations, and combined with the census returns that are available, appears to be at least 500,000. Of this number 82,000 are contained in Europe, and 10,000 in North America. In 1851, there were in Great Britain and Ireland 18,300 deaf mutes. Now, according to the Census of 1861, the deaf and dumb have increased in England and Wales from 10,314 (the number in 1851) to 12,227. In Ireland there were 4,930 in 1861, and in 1851, 4,747.

The following table, by E. Schmatz, appeared in the *Gazette Médicale* some twenty years ago, and shows the number of deaf and dumb persons existing in 1830 in the principal States of Europe :—

Country.	Population.	No. of Deaf and Dumb.
Portugal, ...	3,000,000	1,950
Spain, ...	10,000,000	7,150
France, ...	32,000,000	20,800
Italy, ...	20,000,000	13,000
Switzerland, ...	2,000,000	4,000
Germany, ...	41,223,000	31,657
Hungary, ...	9,444,000	6,139
Denmark, ...	1,800,000	1,260
Sweden and Norway, ...	3,800,000	2,470
Russia, ...	44,118,000	28,667
Poland, ...	5,700,000	2,405
Great Britain and Ireland, ...	21,000,000	12,650

For the education of deaf mutes, it is calculated that there are about 200 schools in Europe and America, containing somewhere over 11,000. Of these institutions, twelve are in England and Wales — viz., London, Margate, Birmingham, Liverpool, Exeter, Manchester (which has two), Doncaster, Newcastle-on-Tyne, Brighton, Bath, and Swansea. In Scotland, at Edinburgh (two), Aberdeen, Dundee, and Glasgow. In Ireland, at Dublin (which has two, one being at Cabra for Roman Catholic children) and Belfast. In America, including Canada, 18; Germany, 48; France, 26; Switzerland, 5. And it may be interesting to add that institutions for the deaf and dumb were first started in

France in	1755
Germany, ...	1778
Austria, ...	1779

Italy,	...	...	...	...	1786
Holland,	...	...	...	...	1790
England,	...	...	...	...	1792
Spain,	...	...	...	...	1805
Russia,	...	...	...	...	1806
Scotland,	...	...	...	...	1810
Ireland.	...	...	...	...	1816
United States,	...	...	...	...	1817
Canada,	...	...	...	...	1848

Those in America, and on the Continent of Europe, are largely patronised and supported by the various Governments, whilst in Great Britain and Ireland they are almost exclusively maintained by voluntary contributions. The late King of Denmark, Frederic VI., declared "that every deaf and dumb person in his kingdom should receive the education necessary to make him a useful member of society." The present laws of England recognise the educated deaf-mute in the same light as persons capable of using all their faculties; but, those unfortunates who are congenitally *blind, deaf, and dumb are looked upon as idiots.** The observations of Dr. Watson on this subject are worth recording here:—"Persons born deaf are neither depressed below nor raised above the general scale of human nature as regards their dispositions and powers of body or mind. They are human beings, individually differing from their kind only by an accidental defect; this defect is not such as to disturb the course of nature in the first stage of the growth of the mental faculties, though, while it operates as a bar to the acquisition of language, it retards and almost precludes their expansion after this stage."

* Persons who are deaf and dumb may contract marriages, for they can give their consent by signs; but it is essential that they should be competent in all other respects.—*Fonblanque.*

The following is a short sketch of the present Ulster Institution. In the year 1845, the pupils of the Ulster Society for the Education and Maintenance of the Deaf and Dumb and Blind were removed to their new establishment in Belfast, the office-bearers of which consist of a Committee, Chaplains, Physician, Principal, Matron, and Teachers. No child is admitted into the Institution as a boarder except between eight and thirteen years of age; and none, either as a boarder or day-pupil, until the parents or friends shall have returned satisfactory answers to the several queries contained in a printed form supplied by the Secretaries. The following extract from the Report may not be uninteresting:—"At the close of 1863 your pupils numbered 126; viz.:—105 deaf and dumb, and 21 blind. Thirty-six new pupils have been admitted during the year 1864; namely—24 deaf and dumb, and 12 blind; making a total of 148; of whom 117 are deaf and dumb, and 31 blind. During the past year, the Institution has been free from any epidemic complaint, and the health of the inmates good. The alterations in your buildings, connected with the erection of your new school-rooms, have, doubtless, contributed largely to the improved sanitary condition of the establishment. The old school-room has been appropriated to an exercise-room for the boys, and some excellent gymnastic appliances have been fitted up in it, which should promote the physical health of the inmates."

As regards the education of the deaf-mutes, I take the following from the Report of the Claremont Institution, at Dublin, for 1865:—"But, though the

interest and the excitement of surprise which used to mark the early meetings and public examinations of the Association have passed away in some degree, the condition of the deaf-mute will always appeal to the compassion of the benevolent, and the success of educational efforts on their behalf can never lose its hold on public sympathy. The difficulties of that education are rather, indeed, over than under what the majority can easily estimate. It is slowly and laboriously that the deaf-mute can be taught the use of language, which is 'the instrument of thought;' and till he has made some progress in the knowledge of words, can rise to the conception of abstract ideas, and to the power of reading correctly on any subject."

Besides the Claremont Institution at Dublin, there is a Roman Catholic one at Cabra, which receives the great majority of the Roman Catholic deaf-mutes of Ireland, and which seems to be conducted in an admirable manner.

The plan of education pursued in these establishments tends to develop and cultivate the mental faculties of these benighted children, elevating them to the same station as ourselves, by means of a careful and judicious training of their minds, so that their intelligence and reasoning powers may not be inferior to that possessed by those who hear. For, as remarked by Mr. John Bird,[2] "To the schoolmaster and schoolmistress belong the responsibility of inculcating into and diffusing through the useful minds entrusted to them the necessary principles of aid and sympathy."

The deaf and dumb, as a class, are good-tempered, willing to do anything they can to please, and are grateful for any attention shown to them. Many persons vastly underrate the extent of the privation under which deaf-mutes labour, and who think that if the deaf and dumb were only put in possession of a method of giving expression to their ideas that all they required had been obtained. For example, it is often imagined that if the deaf and dumb were only taught the manual alphabet, that they could then spell out words and sentences, and that they must of necessity comprehend the ideas that were thereby expressed. This, however, is very far from the fact.

To reason further upon the efforts to improve the social position of the deaf and dumb, or, as they have been called, "the savages of England," needs no special pleading or circuitous logic on my part. It is a fact fully recognized by the Christian public; and, in the words of the Rev. John Kinghan, "the great object of educating the deaf and dumb then is, to take for a season these children of the stranger—these aliens in the country of their birth—from amongst the sons and daughters of the land, and to naturalize them by a diligent development of their mental faculties, and by a judicious moral and religious training, in preparation for that world in which they are destined here below to dwell, and, above all, to enrol them in holy citizenship with the saints of light."

The mechanical education of the deaf and dumb (if I may so call it) was known about 200 years ago; but years hence the aid of medicine may do much more than is at present attempted towards a cure of their

infirmity. "To suppose that the deaf-mute would move the tongue and ear without effort to loosen them would be looked on as monstrous, so it would be for a carriage to move without motive power."[3]

Now, the educated deaf-mute of the present day, is equal to his fellows, and fully capable of performing all the requisite functions of life.

As regards the pupils of these Institutions, Dr. Ringland and Mr. Gelston, in their Report to the National Association for the Education of the Deaf and Dumb in Ireland, and after visiting all the Institutions in these countries, state :—

"In them all there were at least three classes—

1st. Boarder pupils, elected and supported by the Charity.

2nd. Intermediate boarders, who pay a reasonable amount for their maintenance and education, but who are treated exactly like the first class.

3rd. Private parlour boarders.

The first of these classes is to be met with at Manchester, Birmingham, London, Brighton, Doncaster, Newcastle, Edinburgh, Glasgow, and Belfast. This class does not actually exist at Liverpool, a small payment by the relatives, by interested friends, or the result of collection, being there required for every pupil. Each of the second denomination pay £25 a year at Birmingham; and £20 a year at Liverpool, Manchester, London, Brighton, Doncaster, Newcastle, Edinburgh, and Glasgow. . . . To all the institutions on our route, with one exception, parlour boarders are admitted. . . . In the majority of

these schools we found that eight was the minimum, and twelve the maximum age for admission, and that the pupils are retained from five to six years in the institution. To the separation of the sexes we directed considerable attention, and we observed that at London both sexes are in the same school-room, which, however, is of the form of a right angle, one arm of which is occupied by the boys, the other by the girls; thus they are practically kept separate, although nominally in the same room; whilst the pupils of both sexes occupy the same school-room, and meet in the same classes at Liverpool, Manchester, Birmingham, Brighton, Doncaster, Newcastle, Edinburgh, Glasgow, and Belfast. In the majority of these schools the pupils are mingled promiscuously in their respective classes. In one or two we found all of the same sex belonging to each class grouped together, but immediately adjoining those of the other sex. . . . We do not believe that any immorality has ever resulted from this, but, on the contrary, consider that it has been the means of preventing any tendency to it. In reference to this point, we cannot help quoting the opinion of Dr. Peet, of New York, who, in his very interesting report of his visit to the different Institutions for the Deaf and Dumb in Europe, expresses his conviction "that the effects of such a system—namely, strict separation of the sexes—would be an evil." He subsequently goes on to say that "with us the sexes accustomed daily to see each other, are also accustomed to self-control, to the habitual decency of thought, manner, and expression; are accustomed to put down truant thoughts by reli-

gious and moral motives; are impressed strongly with the truth that their future happiness in this life will mainly depend on their present good conduct; and, in short, are under all the moral influence that in families and in society preserves the virtue of the young. If for this moral control, aided by a constant supervision, we should substitute strict seclusion from intercourse with the other sex, should we not impress our pupils with the idea that, in circumstances of temptation, their fall would be inevitable? If we treat virtue as a hot-house plant, will it endure as well when removed from our conservatory to take its chances in the open air?"

CHAPTER I.

BRIEF HISTORICAL SKETCH OF THE DEAF AND DUMB.

"And the Lord said unto him, Who hath made man's mouth? or who maketh the dumb, or deaf, or the seeing, or the blind? have not I the Lord?" This quotation, found in Exodus, chapter iv., v. 11, is the first reference to this class of beings; allusions to the deaf and dumb are also made in Leviticus, the Psalms, and in the Gospels of Saint Matthew and Saint Mark.

In secular history, Herodotus, Aristotle, and Pliny refer to them. In England the first mention of the deaf and dumb are in the laws of Henry the Third's time.

The venerable Bede has recorded a case of deaf-mutism, but Spain seems to have been the first country in which any steps were undertaken towards their education. A Monk, called Pedro Ponce de Leon, who lived in the sixteenth century, undertook to teach two children. After his death, a Spanish Priest, named Bonnet, commenced as a teacher of deaf-mutes, and published a book on their education, and which is the basis of the present English and American systems. "Philocophus, or the Deaf and Dumb Man's Friend," was published in England, by John Bulwer, in 1648. "But his ideas, though highly ingenious, were by no means philosophical or scientific, as he speaks of their ability to acquire a knowledge of music, through

vibration of sonorous bodies: the insusceptibility o the deaf and dumb to the least idea of regulated soun renders them utterly incapable of acquiring any know ledgo of music. What has been said by a naturalis of the *molluscs* is equally applicable to them. The hear nothing of the marvellous inflections of speech the tremulous tenderness of affection, the harsh trumpet-tones of strife, the musical intonations o mirth; deafer than the deafest adder they will remain charm we never so wisely."[5] The following touches slightly on this point: On the 22nd of September, 1865, an experiment was tried by my father (Dr. C. D. Purdon) and myself, in the presence of the Principal (the Rev. J. Kinghan), at the Ulster Institution, on a congenital deaf and dumb girl, aged 12 years, and who was perfectly deaf. A few chords on a concertina were played, the girl being told to apply her fingers to the wood-work of the instrument. She appeared quite delighted; and when asked what was the effect experienced, she referred to her ears, and was perfectly able to distinguish a grave note from one higher in pitch by the vibrations communicated to her fingers alone.

The following account of those who undertook the education of deaf-mutes is abridged from Mr. Hawkins' work on "The Constitution of the Deaf and Dumb:"[6]—"In 1659, Dr. William Holder, an English Clergyman, educated a deaf and dumb youth, and published, in 1669, a work ('Elements of Speech') in which he fully considered the subject of articulation and *hand-language* as substitutes where the ordinary *oral-language* was wanting. In 1662, there was resid-

ing at Oxford a Savilian Professor of Geometry, named Wallis, who was not less famous for his attainments in the exact sciences than for his talents in the art of deciphering secret writing and singular knowledge of the deaf and dumb. Two of his pupils (Whalley and Popham) were introduced to Charles II., and in Oct., 1698, he published his mode of instructing them in the 'Transactions of the Royal Society.' Many of his ideas were, however, surreptitiously obtained from Dr. Holden's treatise, which he had seen in manuscript. He was acquainted with an amateur teacher, named Dalgarno, and was familiar with Bulwer's work. He had, doubtless, also heard of that deaf and dumb nobleman (Bonnet's pupil), then living in Spain, who could *speak with his eyes*. In 1718, a German, named Raphel, published a method which he had pursued in educating three deaf and dumb members of his own family. In 1735, a Spanish or Portuguese Jew gave private lessons in Paris to the deaf and dumb members of the upper classes, under bonds of secrecy; but his ingenious system was nothing more than the system of Bonnet, modified in a few details.

"Heinick, in 1778, founded, under the auspices of the Elector of Saxony, a special school at Leipsic, being the first of its kind over which Government patronage was extended. About 1754, the celebrated Abbé de l'Epée did more to benefit this forlorn class than any of his predecessors. . . . . One of the great ends of life, in the estimation of this good man, was that of diffusing blessings among our fellow-creatures. Two sisters (deaf and dumb) resided at Paris, in a street opposite a Monastry of the

Fathers of the Christian Doctrine. A Father Vanin one of the Brothers of that venerable community attempted, without any particular method, to make some compensation for their want of hearing and speech, but death removed him from his labour of charity before he had attained to any degree of success. The widowed mother of these poor girls much lamented the loss of so good a friend, but a fortuitous circumstance, however, shortly after occasioned the Abbé de l'Epée to call upon her. She was from home, and while waiting for her return, he observed the two young girls occupied at needlework, and that they took no notice of his questions to them. When their mother returned, everything was explained to him relating to their condition, and he went home full of thought how he could supply the place of his deceased *confrére,* and train these afflicted girls in the way of life and the path of Heaven.

"He went direct to Spain. He studied and acquired the language of that country, and familiarised himself with the contents of Bonnet's book. Possessing the key of knowledge, he returned to Paris, opened a school at his own expense for the indigent deaf and dumb in that city.

"De l'Epée died in 1789, but his method was ably carried out, and very considerably altered and improved, by his successor, the Abbé Sicard, whom he had trained and placed out as an instructor of deaf-mutes at Bordeaux. It was during the lifetime of Sicard that special schools for the indigent deaf and dumb were first established in Great Britain." For further remarks upon this highly interesting subject,

and other matters connected with the education of the deaf and dumb, I must refer to Mr. Hawkin's excellent work.

It is self-evident that congenital deafness is one of the sorest calamities that can befall a human being. The dispensation of Providence that closes the ear of a child at birth against the admission of sound, shuts his mind up in a cell, where scarcely a ray of intellectual or moral light dawns on his miserable solitude. The experience of the Rev. J. Kinghan, Principal of the Ulster Institution, on this point, is, that "a deaf-mute may exhibit many of the traits of character that are possessed by his more fortunate fellows, and to the eye of a superficial observer there may seem little to distinguish him from others; still he is a different being. Not only is his knowledge of the common affairs of life bounded by his own limited and imperfect observation, but his mind is a complete blank with regard to the momentous realities which concern him as an immortal being. There is an opinion very common amongst men—as common as it is unfounded—that deaf-mutes are much quicker of apprehension than others, and that when nature takes away one sense she supplies the one next to it in importance with greatly increased power; and so they conclude that the deaf and dumb must be easily educated. But this is a delusion, for the deaf and dumb, as a class, are neither quicker nor duller of apprehension than others, and there is, in reality, no compensating power in either the mental or physical endowments of these children, except so far as this,—that, being so dependent on the use of the eye, there may be liveliness and

quickness about it which is not so manifest in others; but, notwithstanding this, the mind in its operations through the organs of sight possesses no augmented perception."

As an illustration of what patience and perseverance can accomplish, I may mention that "an African deaf and dumb boy, named Harvey Peet, was educated at the Bath Institution. After which he accompanied his friend (a missionary) back to his native land, and is at present a regular attendant at the school at Taboo, where there is another deaf and dumb boy, to whom Harvey has the opportunity of being very useful, while making further progress himself."—(Report for 1864.) Again, the Rev. W. R. Caird once met in Florence a Norwegian gentleman who, though deaf and dumb, knew the Danish, German, and French languages, and a little English, and was one of the best instructed men he had ever met.

CHAPTER II.

CONDITION OF THE EAR, CONGENITAL OR ACQUIRED, OBSERVED IN MUTES, WITH THE VARIOUS METHODS WHICH HAVE BEEN PROPOSED FOR THEIR CURE.

To be born deaf, or to lose the sense of hearing before the power of speech is attained or confirmed, or the stock of language so copious as to impress the memory, is invariably followed by dumbness. It is not usual that dumbness proceeds from any malformation of the organs of articulation, or from any other cause than that of deafness, or, which is sometimes the case, from want of intellect. But deprivation of speech is not the only calamity which want of hearing involves, as it usually entails a train of evils which few can rightly conceive.

The physiological considerations as regards the organ of hearing have been ably investigated by M. Breschet, and I consider them to be so very interesting that I shall offer no apology for mentioning the conclusions that he has arrived at here.

"It would appear that the vestibule is the most important part of the labyrinth, being in truth the proper organ of hearing; and all the other parts are only accessories. Audition, considered in this manner, belongs exclusively to the vestibule and semicircular canals; it is, in fact, to these parts that the organ of hearing is reduced in the entire class of ver-

tebrated animals. In fishes the ampullæ of the semi-circular canals are very voluminous, the tubes long, and the median sinus very large. The sac, of which the existence has been proved in man, and at least suspected in mammiferous animals, is large and well marked in fishes. In the cartilaginous fishes the difference in size between the semi-circular canals and the other parts of the labyrinth is much more remarkable than in the mammiferous tribe; a considerable space exists between the cartilaginous walls and the exterior surface of the labyrinth which is occupied by the perilymph; in many of the bony fishes, however, the membranous labyrinth is only suspended on the inside of the bones of the cranium, and is filled with a liquid which appears to be analogous to the humour of cotugno, found in the semi-circular canals of man, mammiferous animals, birds, and reptiles.

"The analogy of structure between the ear and the eye is very remarkable. Thus we find in each organ three media, traversed in the one by rays of light, in the other by sound. In the ear we find a liquid called the perilymph enclosed in the vestibule, as in the eye we find the aqueous humour contained in the first space; in the ear also there is a second fluid, called the vitrine, enclosed in a small membranous apparatus, upon the walls of which expand the nervous chords, in a similar manner to the expansion of the optic nerve around the vitreous humour of the eye.

"The ololithes, or the octoconies, resemble also in situation the crystalline lens. There are, perhaps, then, two kinds of impressions which are made upon the lamina spinals of the cochlea; secondly, that

which operates upon the sac and the ampullæ of the semi-circular canals. The small disc of the stapes corresponding to the fenestra ovalis, instead of trans-mitting sounds directly to the acoustic nerve, spreading out on the membrane, transmits only the sonorous vibrations to the liquid of cotugno, or perilymph. The two liquids by which the cavities of the labyrinth are occupied, appear to multiply the points of contact of the acoustic nerve with the vibrating body, to render the excitement more lively, and to augment for this purpose the vibratory faculty of the membrae of the sac. The experiments of M. Savart show, in fact, that any tissue or paper when moistened conveys vibrations with greater facility than when dry. Sounds are transmitted to the labyrinth in the greater portion of fishes only by osseous or cartilaginous walls; and this mode of transmission would perhaps be less advantageous than that performed by means of the cavity of the tympanum filled with air, and by an osseous chain put in motion by the vibrations of the external air; but they inhabit a medium more dense; and we are disposed to consider this mode of transmission through solid walls more advantageous by such a medium."

The principal motive I have in directing the reader's attention to the above is in suggesting that the conclusions of M. Breschet might be made available towards giving the power of hearing to young deaf mutes; and Dr. Turnbull has proposed to treat deafness by vibratory or musical sounds. Dr. T. considers that deafness arises from torpidity of the auditory nerve, and his method is as follows. He intro-

duced into one ear an æolian pitch pipe, or othe
properly-adapted musical instrument, and continue
the vibrations within the ear for five or ten minute
daily, at the same time closing the opposite ear, it wi
be then necessary to proceed in a similar manner wit
the other ear. He also states that the healthy secre
tion of the ears must first be restored.

Leschevin has well observed with regard to th
sense of hearing being wanting :—"We should the
have been ill-qualified for the reccipt of instruction
a principal inlet of divine and human knowled
would have been closed, and, there being no reciproc
communication of ideas, our feeble reason could neve
have approached perfection."

The congenital causes which produce deaf-mutis
are not known, but it is thought to be in the nervou
apparatus of the ear. The causes of acquired dea
mutism are scarlatina, measles, hydrocephalus, convu
sions, fright, &c.

Many persons consider absolute deafness to be com
paratively rare, and many cases of deaf-dumbnes
present some sense of hearing. There is seldom an
malformation of the organ of hearing; but, if an
malformation of the meatus auditorious exists in bot
ears, it "usually renders the subject dumb, as well a
deaf, for he is incapable of imitating sounds, which h
does not hear, and, as a matter of course, he canno
learn to speak properly! for some mutes have bee
taught to give utterance to a few gutural sounds bear
ing a slight resemblance to a few words, for the organ
of speech are usually perfect." In such a case as thi
"the surgeon has to rectify the error of nature, and

e has to give, by a double miracle, hearing and speech
an animated being, who, deprived of these two
culties, can scarcely be regarded in society as
ie of the human race."[7] Rosenthal has divided
afness into different degrees, the first of which is
arked by an absolute impossibility of hearing, the
cond by a power of still distinguishing certain
unds, vowels, &c. The first is generally congenital,
id is a cause of dumbness, and, at the present state
medical science, incapable of being rectified.

In examining the ears of the deaf and dumb, the
embrana tympani is found to be in different states,
z. :—Opaque, perforated, very concave, thickened,
sent, or, in some cases, a polypus may be attached
it, or the disease may be occasioned by some change
the meatus, or eustachian tube.

Mr. Edward Glynn[8] gives the following statistical
tails on the causes of deafness, referring to the
pils of the Newcastle-on-Tyne Institution :—

"Born deaf or lost hearing in infancy, 103 ; lost
aring, 47 ; dumb but not deaf (2 from malformation
palate, 3 from idiocy), 5 ; lost hearing, 47—viz.,
om fevers (chiefly scarlet fever), 25 ; measles, 3 ;
ething, 2 ; disease of the brain, 2 ; inflammation in
rs, 1 ; convulsions, 1 ; hooping cough, 1. Lost
aring, aged one year, 9 ; two years, 10 ; three years,
four years, 8 ; five years, 4 ; six years, 4 ; seven
ars, 2 ; eight years, 1 ; fourteen years, 1."

At the Exeter Institution, the total number of
ildren who have received their education since
27 has been 314. Of this number there were deaf
d dumb from birth, 236 ; from typhus and scarla-

tina, 25; teething, 8; measles, 2; convulsions, 3
hooping cough, 1; hydrocephalus, 1; inflammation
the brain, 1; from doubtful causes or informatio
absent 37. These have been received out of 2
families, being 217 cases with only one deaf and dum
child in a family; 29 cases with 2; 12 with 3; and
with 4.—(Report for 1864.)

Mr. Toynbee[9] gives the following condition of th
ears of 141 congenital cases, in which sounds we
heard :—

"In 11 who heard a clapping of hands, 7 had
normal aspect.

"In 2 each membrana tympani was opaque.

"In 1 each meatus was distended by cerumen, an
the membrana tympani was opaque.

"In 1 each membrana tympani was concave.

"In 44 who heard a shout, 21 were apparently no
mal.

"In 7 each membrana tympani was dull.

"In 4 each membrana tympani was dull and meat
full of cerumen.

"In 4 each membrana tympani was opaque.

"In 4 each membrana tympani was concave.

"In 2 each membrana tympani was concave an
opaque.

"In 2 each membrana tympani was perforated.

"In 39 who heard a loud voice, 24 were apparentl
natural.

"In 7 each membrana tympani was dull.

"In 3 each membrana tympani was dull and meatu
full of cerumen.

"In 3 each membrana tympani was opaque.

"In 1 each membrana tympani was concave.

"In 1, in one ear, the membrana tympani was normal; in the other opaque, and the meatus full of cerumen.

"In 43 who heard the vowels and repeated them, 24 appeared to be normal.

"In 6 each membrana tympani was dull.

"In 5 each membrana tympani was dull, and the meatus full of cerumen.

"In 5 each membrana tympani was opaque.

"In 1 each membrana tympani was concave.

"In 5 who heard the words and repeated them, 2 appeared normal.

"In 1 each membrana tympani was dull.

"In 1 each membrana tympani was dull and meatus full of cerumen.

"In 1, in one ear, the membrana tympani was opaque and concave, and in the other it had fallen in towards the promontory.

"In the single instance in which short sentences were heard, and repeated, the membrana tympani was dull."

Many of the above cases at a month old might have been able to hear a clock strike; but, from the auditory passage becoming filled with cerumen, and thus preventing the transmission of sound, a paralyzed condition of the auditory nerve, accompanied with dullness of the membrana tympani has probably ensued.

I borrow the following table of the condition of the ear in 36 dissections of deaf mutes from Mr. Toynbee's work on "Disease of the Ear:"—

Meatus Externus.	Membrana Tympani.	Tympanum.	Labyrinth.	Nerve.	Name of Observer.
Absent.	Healthy.	Healthy.	Healthy.	As soft as mucus.	Itard.
Do.	Do.	Do.	Do.	Healthy.	Fabricus.
Do.	Do.	Do.	Do.	Do.	Do.
Healthy.	Do.	Do.	Do.	Do.	Itard.
Do.	Destroyed	Containing vegetations from mucous membran. Ossicles absent.	Do.	Do.	Do.
Do.	Do.	Do.	Do.	Do.	Do.
Do.	Partially.	Containing scrofulous matter.	Do.	Do.	Cock.
Do.	Do.	Healthy.	Do.	Do.	Do.
Do.	Do.	Do.	Do.	Do.	Do.
Do.	Healthy.	Containing calcareous matter.	Do.	Do.	Itard.
Do.	Do.	Full of gelatinous matter.	Full of gelatinous matter.	Do.	Do.
Do.	Do.	Containing a yellow fluid.	Healthy.	Harder than natural.	Rosenthal.
Do.	Do.	Anchylosis of stapes to fenostra ovalis.	Do.	Healthy.	Valsalva.
Do.	Do.	All the Ossicles wanting.	Do.	Do.	Reimarus.
Do.	Do.	Healthy.	Vestibule full of caseous matter.	Do.	Haighton.
Do.	Do.	Do.	Cochlea consisting of one turn and a half.	Do.	Munidini.
Do.	Do.	Do.	Vestibulo, cochlea, and semi-circular canals absent.	Do.	Meckel.
Do.	Do.	Do.	Semi-circular canals absent.	Do.	Murer.
Do.	Partially destroyed.	All the Ossicles absent.	Two of the semi-circular canals imperfect.	Do.	Cock.

Meatus Externus.	Membrana Tympani.	Tympanum.	Labyrinth.	Nerve.	Name of Observer.
Healthy.	Healthy.	Healthy.	Two of the semi-circular canals imperfect.	Healthy.	Cock.
Do.	Do.	Do.	Healthy.	Atrophied.	Sylvius.
Do.	Do.	Do.	Do.	Indurated.	Arneman.
Do.	Do.	Do.	Do.	Wanting.	Morgagni.
Do.	Do.	Do.	Fenestra rotunda closed by bone in each ear.	Healthy.	Cock.
Do.	Do.	Do.	One semi-circular canal incomplete in one ear; in the other ear healthy.	Do.	Thurman.
Do.	Do.	Do.	Aquæductus vestibuli very large.	Do.	Dalrymple.
Do.	Do.	Do.	Healthy.	Very hard.	Rosenthal.
Do.	Do.	Do.	Semi-circular canals absent in one ear.	Healthy.	Murer.
Do.	Do.	Do.	Filled with caseous matter.	Half its usual size	Haighton.
Do.	Do.	Do.	Healthy.	Atrophied.	Hoffman.
Do.	Do.	Do.	Do.	Compressed by a tumour.	Duvernoy.
Do.	Do.	Do.	A portion of one of the membranous semi-circular canals filled with Otoconic.	Healthy.	Toynbee.

Meatus Externus.	Membrana Tympani.	Tympanum.	Labyrinth.	Nerve.	Name of Observer.
Healthy.	Healthy.	Healthy.	The Superior and Posterior semi-circular canals incomplete in right ear.	Healthy.	Toynbee.
Do.	Do.	Do.	The Superior incomplete in left ear, membranous semi-circular canals absent.	Do.	Do.
Do.	Do.	Do.	Healthy.	Do.	Do.
Do.	Destroyed	Mucous membrane thick.	Lamina Spiralis near the vestibule filling the scala tympani.	Otoconie obstructing the canal.	Do.

I have never had the opportunity of dissecting the ears of deaf mutes, but I can testify to the truthfulness of Mr. Toynbee's statements as to the appearance of the membrana tympani.

On October 13th, 1865, five deaf and dumb girls, totally deaf, were selected from amongst the inmates of the Ulster Institution promiscuously by the matron, Mrs. Turner, for me to examine their ears. Four of these were congenital cases, their ages varying from eight to twelve years. I remarked that the concha and external auditory meatus in these four were very small and rather improperly developed. By means of the speculum and lamp, I was enabled to see the state of the membrana tympani.

In 2 children totally deaf the membrana tympani was opaque and concave. Throat and fauces healthy.

In 1 child totally deaf, the membrana tympani was opaque.

In 1 child the membrana tympani appeared to be natural, but the meatus was full of wax. The tonsils slightly enlarged.

In the one aequired case, the membrana tympani was perforated, and covered with a glairy seeretion. This girl had scarlatina between three and four years of age, and could then speak a little.

Congenital deafness involves, as is well known, dumbness, and is, I may safely say, incurable; but accidental deafness, which arises from such diseases as scarlatina, measles, small-pox, &e., oceurring during infaney, is of a more eurable nature.

On looking at the eases of disseetions of the ears of deaf mutes, as taken from Mr. Toynbee's excellent work, I think it will be at onee evident that serofula has an important part in eausing deaf-mutism, and in some cases an hereditary tendeney to deafness has been obsrved. Mr. Hawkins states that, "when deafness is found to run in families, it is most frequent on the maternal side," and he gives a few instanees of this rather eurious fact.

It is now fully reeognised that the deafness of mutes is usually dependent on some disease of the auditory nerve, *post-mortem* examinations revealing this nerve in diffcrent abnormal conditions. "We must attribute it to lesion of the periphcric, or of the centrie, or even of both extremities of the auditory nerves. It is observed that in all cases there must be eomplete inability to eonduet sound in both nerves." . . . "Deaf-mutness is not hereditary. Amongst the

parents of 45 deaf mutes, only 3 suffered from hardness of hearing. The remainder are in full possession of the power of hearing."[10]

The morbid states of the ear, either congenital or acquired, observed in deaf and dumb persons, is a highly-interesting subject, and the most common is a deposition of tubercles in the tympanum and mastoid cells, showing a strumous diathesis. The membrane lining the fenestra rotunda is sometimes ossified, or thickened, and the cochlea is frequently improperly developed. Schallgruber has remarked in a few cases the vestibule more contracted, and smaller than natural. The semi-circular canals are usually defective in mutes, and they may be either smaller, contracted, incomplete, filled with caseous matter, terminating in a cul-de-sac, or absent. The aqueducts are often larger than natural.

Saissy[11] mentions a rather curious case of the total absence of the labyrinth in a young child which died at Lyons of fever. "The membrana tympani was normal; but the ossicles were absent, and the cavity of the tympanum was full of mucous matter. The vestibule, cochlea, semi-circular canals, and fenestra were wanting; eustachian tube natural." Sometimes the auditory nerve is found compressed by a tumour.

Mutes have occasionally been taught to speak, and to acquire this it is necessary that the deaf and dumb person should watch and imitate the various motions of the lips, &c., of their instructor; but the voice never acquires the same tone as that possessed by the hearing, as the various difficulties in pronunciation and the peculiar manner of keeping the mouth pro-

duce a dragging tone, which is very disagreeable. The following I abridge from Dr. Ringland's Report to the Committee of the Claremont Institution at Dublin :—"It must be borne in mind that the majority of mutes are dumb because they either have never heard or have been, subsequent to birth, deprived of the gift of hearing, and not because they are devoid of the organ of speech. Attempts have consequently been made to teach the deaf and dumb to articulate. In our progress we met with occasional selected cases wherein considerable success had resulted from the experiment; but in the majority, if not in all those instances, the deafness was not congenital, but had arisen from some physical cause at an early age, and the subject of it had learned to speak before becoming deaf. So far as we could learn, all the teachers of the deaf and dumb, with but few exceptions, consider it applicable to only a few, but disapprove of it as a system to be applied to all; the practicability of acquiring it to an extent that would be useful, being, in the majority of cases, according to their judgment, more than doubtful."

Dr. Peet who himself deems it "useless to teach articulation to deaf mutes, except in cases where extraordinary labour has been bestowed on pupils of rare docility," informs us "that the French teachers regard it as a mere accomplishment desirable when practicable, but practicable in comparatively few cases; but in Southern Italy it is altogether repudiated; that it is attempted in Germany and Northern Italy where German influence predominates; but that in such of their schools wherein it constitutes a prominent feature in

the course of instruction, the success was very inconsiderable. He likewise mentions that Mr. Day in his report on the German schools states, that pupils who seem to understand their own teacher, and to be understood by him quite readily, are often wholly unable to understand or make themselves understood when they leave school and go into society. He also adds that this ought to be borne in mind that the German language is much better adapted than the English to the teaching of articulation to deaf mutes. In London, however, articulation has been long since the system of the school, and all the pupils are taught to speak; Mr. Watson considering that it is suitable to a very considerable proportion of the deaf and dumb, but admitting that it is not applicable to all."

Dr. Ringland quotes the following from a report of the Ulster Institution. Itard, the learned and celebrated physician of Paris, who devoted his life to the study of deafness, abandoned all attempts for the cure of the deaf mute, expressing his convictions that such attempts were utterly useless, "medical means," said he, "have no effect upon the dead, and to me it is certain that the ear in the deaf mute is dead." In the eighteenth century a distinguished physician in Holland named Arnan wrote on this subject, and his work falling into the hands of a schoolmaster near Hamburg, named Heinicke, he took up the study and afterwards became principal of a school at Leipsic in the year 1778. The Dutch physician attributed a mysterious power to spoken language, and Heinicke, embracing this strange idea, based his system of teaching upon the principle that spoken language was the only proper

medium or vehicle of thought adhering closely to the notion that abstract ideas cannot be communicated to the deaf and dumb by gestures, or even by written words; that spoken words were indispensable. He strictly insisted upon articulation and reading upon the lips as indispensable instruments of communication; and these continue to be the great peculiarity of German schools. . . . . Articulation or oral language is described as speech mechanically acquired by attention being directed to the motions of the lips and vibrations of the vocal organs, which are recognised by the deaf and dumb by sight and feeling. . . . Labial language, or reading on the lips, for the deaf mute is to understand the words spoken by others by watching the vocal organs of the speaker, but it is found that many sounds emitted so run into each other and show so little difference externally on the organs of speech, that very few attain to any great proficiency. Indeed, the language of the lips, or articulation, can never be to the deaf mute a language of sound; from this he must always be debarred, so that, after all, the movements of the lips and the motions of the vocal organs being recognised only by him, by sight or touch, are but signs less correct, less intelligible, less certain, and less available than written words." (The above is from the pen of the Principal of the Ulster Institution, the Rev. J. Kinghan).

I do not think that there is anything wonderful, after all, in teaching a deaf mute to pronounce certain words, &c., for animals have been taught to accomplish the same, as, for example, "the learned Leibnitz reported to the French Academy that he had seen a

dog in Germany which had been taught to pronounce certain words. The teacher of the animal was a Saxon peasant, and the dog was three years old. In three years the peasant had taught his dog to pronounce thirty German words; and it used to astonish its visitors by calling for coffee, tea, &c.; but it is proper to remark that it required its master to pronounce the words beforehand." (Chambers' Tracts.)

It is said that Deleau has in a few cases been successful in giving the power of hearing to mutes, but it is uncertain whether the sense of hearing remained permanent or not.

Now every one born into this world is dumb for some time, until sufficient sense is obtained to imitate words and sentences, but in the deaf and dumb the ear is the organ at fault, and, as before remarked, probably from some diseased condition of the auditory nerve; dumbness being only one of the phenomena that accompanies congenital deafness.

To cure the deaf-mute of his infirmity various methods have been from time to time proposed and carried out; but their success has been of short duration. Blanchet treated deaf-mutes for several years with "vocal and auditory gymnasties," and also private instruction, but yet the children improved no further than that they were able to say after him "letters, syllables, and a few short sentences—an improvement which resulted rather from the use of the eye than the ear."

Mademoiselle Cléret (a Governess) applied, in Aug. 1855, to the Minister of Public Instruction, Paris, to obtain assistance for trying a method of curing the

deaf and dumb, and which she discovered by accident. It consisted in dropping sulphuric ether into the external auditory meatus, about six drops each day—its use being suspended after a few days, and again commenced. A Commission was appointed to try the efficiency of this remedy. Twenty persons were experimented on, most of whom were deaf and dumb children, as also some old men whose hearing was impaired. In a few cases, for a short time, there were symptoms of improvement.

I think that in very young children deaf from opacity of the membrana tympani, the use of ether might be of service; but in old cases, where the opacity becomes organized, it can be of little avail.

After the elapse of years a slight degree of hearing sometimes becomes apparent. When this occurs some attempt ought to be made to develop it, and, for this purpose, counter-irritation over the mastoid process will often prove useful, or the use of the artificial drum can be tried, as recommended by Mr. Toynbee; but if the nervous apparatus of the ear is disorganized, or improperly developed, it will be impossible to impart the sense of hearing. All that can be done in such a case is to educate the child as a deaf-mute.

Itard said that absolute deafness was extremely rare. If such be the case, every effort should be made to restore the sense of hearing. Mr. Curtis, in a paper in the *London Medical Gazette*, November, 1831, says that in "very young children I have found the most frequent cause of deafness to arise from obstruction of the eustachian tube and from various affections of the tympanum," and he recommends emetics, which are no

doubt useful in removing mucus from the eustachian tube, for they act secondarily on the mouth and throat, giving rise to increased secretion and stimulating the absorbent system.

Dr. Morrell, of New York, in his Report for 1846, remarks that, in twenty-five cases of death from scarlatina, where deafness had been a constant symptom, the lining membrane of the eustachian tube was pale, thickened, and covered with a thin glairy secretion.

"In a medical point of view of the deaf-mute—*i.e.*, those afflicted with disease—diseases of the parts connected with the ear, tonsils, uvula, eustachian tubes, and lining membrane of the throat, and enlargement of the tongue, attended with difficulty in swallowing the food, arising from infantile disease, that no means hitherto have been taken to remedy. . . . The organ of hearing being unaccustomed to the action of sound, it becomes as it were paralyzed or inactive. This inactivity should be excited by the use of a nitrogenous medicine, *Strychnine*, well known to act on the muscular and nervous system of other organs within a few minutes of its application. . . . Lancing the gums freely in infants during teething will greatly prevent deaf-mutism when a tendency exists to it." . . . The two following cases of deaf-mutism arising from scarlatina are given as examples:—"E. B., aged six years (April, 1837), applied to me: had been called a deaf and dumb child. The state of deafness had been noticed more particularly after scarlet fever, when she was two years old. I was consulted a few weeks before our gracious Queen's ascension to the Throne. The appearance of her face

was dull and heavy; the deafness so great as not to hear any sound; the speech was quite inarticulate; the uvula and tonsils were much swollen. I treated the case with external applications and ammoniacal medicines. In a fortnight there was a sensible improvement evinced by her hearing the clock strike. On the day of coronation she was greatly frightened, even to shedding of tears, when out of doors, at the report of some cannon at half a mile distant. A gradual improvement continued, and she was in a few months able to hear Divine service in a chapel, and has since learnt to read and speak intelligibly.

"A boy eight or nine year's old, the son of a farmer, was placed before me by the matron; he was admitted into the institution the previous day. The medical attendant of the institution had pronounced him to be a proper object of admission. On inquiry of past treatment during the last five years no account could be given, and his present state of deaf-mutism could not be questioned by any common observer. It appears that his mouth was abnormal, being drawn on one side, the result of confirmed old disease, and his face was covered with a dry scaly skin. It is contended that there were sufficient marks of disease to warrant a closer examination than is usually adopted at an early period of life. If medical treatment had been adopted a cure might have been effected."[3]

The manner of ascertaining whether a child is deaf and dumb is of much importance, and to illustrate this subject it will be necessary to touch briefly on Acoustics.

A sound is heard when any sudden impulse or shock

is given to the air which may be in contact either directly or indirectly with the ear.

Now, it is well known that sound arises from the vibrations of the air, and the shock which causes the sensation of sound spreads or is propagated in all bodies, either solid or fluid, but with decreasing strength as the distance becomes greater.

The principles thus laid down respecting the origin and propagation of sound, and the causes of the different phenomena it exhibits, will usually be found to have corresponding parts to each other in the human ear, and for all practical purposes the ear may be divided into three parts, viz.:—The external ear, the tympanum, and the labyrinth. The external part of the ear called the concha is adapted to those vibrations of air necessary to sound. From the concha we have a tubular passage leading inwards, the purpose of which is to collect and concentrate the vibrations, so as to fall upon the membrana tympani. The second division consists of that cavity lying between the membrane called the tympanum, and lastly we have the labyrinth consisting of the vestibule, semi-circular canals, and cochlea. The actions of the principal parts seem to be as follows :—The pulsations falling on the membrana tympani cause it to vibrate, and, according to Mr. Martin, are continued through the agency of the chain of bones to the foramen ovale, where the nerve is prepared to receive them in agreement with the laws of hydraulic pressure, and are thus transmitted to the brain. Now, it sometimes happens that a child is said not to be deaf, because, on a loud noise being produced as by shouting loudly, the child

starts or looks up; but it is well known that all loud noises are accompanied by considerable vibration of the walls and floor of the room the person may be in, so that, although deaf, we may have our attention directed to some particular spot by the vibrations alone.

For the purpose of ascertaining whether a child is deaf various plans have been recommended. The following seems to be one of the most simple, the child sitting on the knee of the nurse, and having its back towards the physician, and being amused by a toy of some description, so that its attention may be distracted, may be experimented on as follows :—

After warning the nurse and parents, or others who may be in the room, not to start or exhibit any symptoms of surprise, the physician then may either shout or clap his hands loudly. If the child should start or show some symptoms of hearing, it will be evident that some degree of hearing exists.

CHAPTER III.

THE MANIFESTATIONS OF DISEASE OCCURRING IN THE DEAF AND DUMB.

STERNE has truly remarked—to "see the face, first observe what character is written in it, take notice in what posture he stands, and mark the turns and expressions of his limbs," and in no class of human beings are the external appearances of so much importance as in the deaf and dumb, for by their aid it is usually easy to the initiated to form a correct diagnosis.

The manifestations of disease, then, may be divided into—1. *The Expression of the Face.* 2. *Nutrition of the Body.* 3. *Perspiratory Functions.* 4. *State of the Organs of Voluntary Motion.* 5. *Signs Furnished by the Nervous System.* 6. *State of the Respiratory Organs.* 7. *Arterial System.* 8. *Digestive, Urinary, and Sexual Functions.*

1. Expression of the face. Now, the means employed in investigating diseases occurring in others are often applied with difficulty to mutes, so that we must cultivate, so to speak, our faculties of observation by careful and judicious training; and one thing very useful to the physician attached to an Institution for the deaf and dumb is a knowledge of the deaf-mute alphabet, and of alphabets there are two kinds—viz., the one-handed and two-handed. The one-

handed alphabet is used in a good many of the American Institutions, as also in the Institution at Belfast, and has been found more convenient, as it only requires one hand; the other hand at the same time can be employed at something else. The various expressions of the face are characteristic of different diseases. Not only may there be signs of intense suffering, but often a vacant look, showing too well loss of consciousness. During sleep this sign is most valuable. Again, in abdominal diseases, a peculiar expression of the mouth is very characteristic. When we have a drooping state of the eyelids, vital exhaustion is frequently present, and this state of the system is sometimes accompanied by a dark circle around the eyes. The color of the countenance will, of course, vary according to the disease under which the patient labours, as also the state of the surface of the body, both as regards color, moisture, temperature, &c.

2. Nutrition of the body. We may have this function excessive, or emaciation, combined with flaccidity.

3. Perspiratory functions. In deaf-mutes we most usually have a dry, hot sensation, rather than a burning state of the skin in diseases of an inflammatory nature; but in some complaints the reverse occurs. Generally the moisture of the cutaneous surface is the same as in others, being increased and diminished according to circumstances. The smell will sometimes be a help towards a diagnosis.

4. State of the organs of voluntary motion. These organs are variously affected. In diseases of a low type, there is great loss of muscular power, cramps

and convulsive attacks being often present. Instrumous subjects, emaciation of the extremities frequently occurs. The manner of walking is also a valuable sign.

5. Signs furnished by the nervous system. In obtaining help towards a correct diagnosis by means of the nervous system, the state of the eye is a sign of much importance, as, in mutes, it is generally an index, so to speak, which indicates the secrets of the mind and body, as well observed by Hippocrates—

"Ut oculi valent, sio ipsa persona."

By examination we must also find out that the nerves of special sense are in a state capable of transmitting impressions to the brain, as the power of hearing is lost. Again, the signs furnished by sensation and sensibility are worthy of attention as regards pain, &c., for the deaf and dumb, as a class, are more excitable than others.

The mind, especially in young mutes, is often in a state of impotency, this state being induced by the long-continued inactivity to which they have been for so many years subjected to, but as Milton has it—

. . . "in the soul
Are many lesser faculties that serve
Reason as chief."

after the delay of years these qualities make their appearance by proper management.

6. State of the Respiratory Organs. The state of the lungs is of much importance, as mutes frequently labour under chest affections, which often exist in an incipient form; here I shall only mention the different states of the respiratory system which demand notice:

Frequency and quickness of breathing; expansion of the chest; state of the mouth and nostrils during respiration; difficult respiration; odour of the breath; expectoration, whether profuse or otherwise; and we must judge of the state of the lungs by the respiratory murmurs and percussion alone.

Frequent sighing is a sign that should make us look to the heart, as this is one of the means employed by nature to relieve congestion of that organ.

> "He sighed a sigh so porteous and profound, as it
> Did seem to shatter all his bulk and end his being."—*Shakspere.*

7. Arterial System. With regard to the arterial system the state of the pulse is to be noted, as also whether there be palpitations, irregularities, &c., of the heart's actions.

8. Digestive, Urinary, and Sexual Functions. The organs engaged in the process of digestion are to be closely examined, as dyspeptic attacks are very common; also the state of the bowels, tongue, and appetite, nor are the urinary and sexual functions to be overlooked.

I have been as concise as possible, probably too much so, in the preceding description of the various ways in which disease makes itself manifest; but as my object has been only to record some of the peculiarities of disease in the deaf and dumb, I must refer for further information to any of the various works on the practice of medicine.*

* Dr. Kingsford, physician to the British Asylum for Deaf and Dumb Females, informs me "that as a class they (the deaf and dumb) are peculiarly liable and sensitive to cold and subject to a languid state of the circulation; they are also very prone to indulge (if allowed) to excess in eating, having frequently voracious appetites."

Infancy being the age of imitation, it is eviden that this faculty is one of the chief means of its in struction, but the first object is the education of th senses, for, without this, there can be no judgmen nor intellect. Perception and memory are well ob served in infants who perceive quickly the variou objects which surround them. Indeed, in man' nature are stored all the capacities of sensation imagination, thought, memory, and hope, which be come more fully developed as the years between child hood and old age increase; and in the brain there i hid the power of distinguishing between good an evil. These qualities, when cultivated, give to th deaf mute an equality with all; but those who ar born blind, deaf and dumb, are to be surely pitied.

> "With the year
> Seasons return; but not to me returns
> Day, or the sweet approach of even or morn,
> Or sight of vernal bloom, or summer's rose,
> Or flocks or herds, or human face divine;
> But clouds instead, and ever-during dark,
> Surround me from the cheerful ways of men."—*Milton.*

Our senses are given to us both as a means of intellectua life and instruments of labour, and as agencies of joy.

Mr. Hawkins, after examining into the number o the deaf and dumb in the various institutions of Grea Britain and Ireland, also in America and Prussia takes 5,855 cases as an average, and concludes tha the actual preponderance is about sixty per cent. o the side of the congenitally deaf, and forty per cent on the side of the accidentally deaf and dumb.

It is well known that hereditary transmission o different qualities, diseases, &c., takes place both i

man and animals, and although deaf-mutism may rarely arise by direct descent, still instances have occurred, as, for example, in the report of the Edinburgh Institution, the great grandfather was deaf and dumb, and this, as well as other peculiarities, transmitted from father to son, frequently lie dormant for one or two generations. As an exciting cause habitual drunkenness of one or both parents has been mentioned; and Plutarch, in a translation of his "Morals," published in London, 1718, vol. i. remarks: "When Diogenes said to a stripling, somewhat crack-brained and half-witted — 'Surely, young man, thy father begot thee when drunk.'"*

Dr. Carpenter[12] informs us that—"In the production of vocal sounds that nice adjustment of the muscles of the larynx, which is requisite to give forth determinate tones, is ordinarily directed by the auditory sense, being learned in the first instance under the guidance of the sounds actually produced; but, being subsequently effected voluntarily in accordance with the mental conception (a sort of inward sensation) of the tone to be uttered, which conception cannot be formed unless the sense of hearing has previously brought similar tones to the mind. Hence it is that persons who are born *deaf* are also *dumb*. They have no malformations of the organs of speech; but they are incapable of uttering distinct vocal sounds or musical notes, because they have not the guiding conception or recalled sensation of the nature of these. By long training, however, itself, some persons thus

* From the medical reports of the Massachusetts Establishment for Idiots, it appears that out of 359 inmates, three-fourths of the number were children of intemperate parents.

circumstanced have acquired the power of speech; but the want of a sufficiently definite control over the vocal muscles is always evident in their use of the organ. It is very rarely that a person who has once enjoyed the sense of hearing afterwards becomes so *completely* deaf as to lose all auditory control over his vocal organs. An example of this kind, however, has been made known to the public by a well-known author, as having occurred in himself, and the record of his experiences* contains many points of much interest. The deafness was the result of an accident occurring in childhood, which left him for some time in a state of extreme debility; and when he made the attempt to speak it was with considerable pain in the vocal organs. . . . . It is a curious circumstance that the words which have been in use previously to the supervention of deafness are still pronounced (such of them, at least, as are kept in employment), as they have been in childhood, the muscular movements concerned in their articulation being still guided by the original auditory conception, in spite of the knowledge derived from the information of others, that such pronunciation is erroneous. On the other hand, all the words subsequently learned are pronounced according to their spelling; the acquired associations betweeu the muscular sensations and the written signs being in this case the obvious guide."

* See the "Lost Senses," by Dr. Kitto, vol. i., chap. 2 and 3.

CHAPTER IV.

DISEASES TO WHICH THE DEAF AND DUMB ARE PECULIARLY LIABLE.

I SHALL briefly endeavour to lay before the reader the principal diseases to which deaf mutes are liable; and, first, a few words are necessary on deaf-mutism arising from consanguineous marriages. Now, from the result of my correspondence, I find that there is a greater susceptibility to some forms of disease more than others; but I have not been able satisfactorily to discover whether this arises from intermarriage of blood relations.

From the Report of the Ulster Institution for 1864, the number of deaf mutes in school was 117; and it seems that fifteen of the parents of these children had *two*, and in some cases *three*, deaf and dumb in their families. This curious fact is more common in some counties than others, as there are in the County of Antrim 7 families in which this occurs, in Down 4, in Monaghan 2, in Tyrone 1, and in Armagh 1. Again, from the Report of the Edinburgh Institution for 1855, it appears that, out of sixty pupils, in the families of ten of these children there were two deaf and dumb, and this occurred most frequently in Fifeshire. In one family there were four deaf and dumb, and in another the great grandfather was a deaf mute. In the Newcastle Institution there have been

two cases of four deaf in the same family; seven of three ditto; nine of two ditto; one had a deaf and dumb mother; three have cousins deaf and dumb; one had a brother, a cousin, a grandmother, and aunt deaf and dumb; one had three brothers and a cousin of father deaf and dumb; one had two sisters and a niece deaf and dumb. In two cases the parents were cousins before being married. Number of inmates, 62. Year 1859. Dr. Begg, the medical officer of the Dundee Institution, has informed me that there has been four children of one family in the Institution. Neither the father nor mother, nor any of the relations, have been deaf and dumb. Two brothers, deaf and dumb, whose father and mother were not. Mr. Drysdall, the Principal of the Institution, is deaf and dumb; his father and mother were cousins, and there has been a few cases of intermarriage in his family, and in several instances followed by deaf and dumb offsprings.

The Census Commissioners, in their Report for 1861, inform us that the Province of Leinster contains 1,303 deaf mutes; Munster, 1,559; Ulster, 1,949; and Connaught, 842. In 242 instances the parents were related in the degrees of either first, second, third, or fourth cousins. I think that it is a great pity that the Committees of other Institutions do not give to the public such facts as the above, for, in the course of a few years, valuable information could be derived from this source.

The reality of consanguinity as a prolific, perhaps the most prolific, cause of deaf-mutism is too patent to be denied. Other causes are also enumerated by

authors, as, for instance, fright during gestation, illegitimacy, abnormal conceptions, attempts at concealment at birth, extreme youth of parents, &c. "Moreover, early marriages, though they cannot be called vicious, are always common when the means of subsistence fluctuate to both extremes. Their effect is to produce feeble children, and afterwards to starve such of them as might, under other circumstances, be reared." Thus, when any of the diseases to which all children are more or less liable attacks them, deafness frequently occurs—as, for example, after scarlet fever. These remarks I consider apply equally to illegitimate children, and which being frequently the offsprings of licentious, drunken, and filthy parents, are more liable to disease. From the observations of Dr. Caspar it appears that for ten legitimate children who die during the first month, there are twenty-four illegitimate; but it is right to mention that his experience is derived from continental cities. Mr. Hawkins,[6] speaking of the consanguinity of parents, states that "There is some certain reliance, wo think, to be placed in this conjecture, as in numerous instances of birth-deafness within the range of our own knowledge, we have found the parents were in some degree, but generally as first cousins, related before marriage. A striking illustration of the ill effects of such marriages has also been noticed by Dr. Boudin (at a late sitting of the Academy of Science in Paris) of two brothers in perfect health, and well-constituted men, who had married two sisters, their cousins-german. The elder brother has had several children, one of whom is deaf and dumb; the other brother has had six

children, the first, third, and fifth of whom can hear while the second, fourth, and probably the sixth (an infant), are deaf and dumb. Besides, it is well known that the union of near relationship, that in-and-in marriages of persons of one collateral stock or locality are very frequently attended by a certain degeneracy in the offsprings of such marriages, and that this degeneracy, if the community be not disturbed by war, immigration, or some other extrinsic cause, gradually increases until cretinism (as applied to goitrous subjects), scrofula, idiocy, deaf-dumbness, and a mournful catalogue of congenital evils are generated in it." A deaf and dumb child was admitted into the Ulster Institution during the year 1865, whose father (lately deceased) was deaf and dumb. He married his second cousin, and had by her four children, three of which are deaf and dumb. Since his death a fifth child has been born, who is probably also deaf and dumb. These children have a deaf and dumb uncle, and two deaf and dumb aunts. Dr. Helsham quotes the following in his pamphlet,[13] a copy of which he was kind enough to send me:—"Two brothers married two sisters, all residing in an island, the population of which was very limited. Three sons of one family espoused three daughters from the other. All the various members of these families were in the enjoyment of sound health, there being many children besides these concerned. The three children born to the first couple were all perfect; of the second couple of five children—1. Spoke imperfectly; 2. Deaf and dumb; 3. Deaf and dumb; 4. Perfect; 5. Spoke imperfectly. Of the third couple, three

children were born living, and one was a monstrosity; of these three children—1. Deaf and dumb; 2. Deaf and dumb; 3. Did not speak till six years old. Two brothers married two sisters, their cousins; the eldest couple had several children, the first of which only was born deaf and dumb. The second couple had six children—1. Of delicate constitution; could hear well; 2. Deaf and dumb, but strong; 3. Died in early infancy; 4. Deaf and dumb; 5. A small child; hears well, but stammers; 6. An infant, totally unconscious of noise.

Dr. Hervier, in a paper published in the *Journal of Practical Medicine and Surgery*, for July, 1865, speaking of consanguineous marriages, states that:—"At Rive-de-Gier, a town containing 15,000 inhabitants, in crossed couples, there occurred twelve cases of deaf-mutism, twenty-five of sterility, and three of poly-dactylism; whereas, in upwards of twenty consanguineous but well assorted marriages, the children have lived and may be considered as models of health and symmetry." Dr. Hervier considers it necessary that one or both parents must "labour under some constitutional taint," so as to occasion deaf-mutism in their offsprings.* Again, the remarks of Combe[14] are well worth recording:—"Marriage between blood relations tends decidedly to the deterioration of the physical and mental qualities of the offspring. . . . If the first individuals connected in near relationship who unite in marriage are commonly robust and

*By consanguineous marriages offsprings are produced with diminished powers of resisting atmospheric influences, and in this changeable climate become quickly the subjects of struma, these affections being common in a cold, damp, and variable atmosphere.

possess very favourably developed brains, their off
springs may not be so much deteriorated below the
common standard of the country as to attract particular
attention; but this law does not hold, for the offsprings
are uniformly inferior to what they would have been if
the parents had united with strangers in blood, of
equal vigour and cerebral development. Whenever
there is any remarkable deficiency in parents who are
related in blood, it appears in the most marked and
aggravated form in the offsprings." Mr. Buxton,
Principal of the Liverpool Institution, in a paper read
before the Medico-Chirurgical Society of Liverpool,
gives the result ascertained of the offsprings of 30
deaf-mutes, each of whom married a healthy five-
sensed partner, and the proportion of deaf and dumb
in the whole of those families was 1 in 135; but in
303 deaf-mutes who married 303 deaf and dumb
females, the proportions of deaf and dumb offspring
was 1 in 20.*

In 1860, a committee of the New York Sanitary
Association commenced to investigate the subject of
intermarriage of blood relations, and it has been found
by Dr. Morris, who is attached to the deaf and dumb
institution at Fanwood, New York, that a great many,
indeed the majority of the inmates are the offspring
of blood relations; and it is well known that in the
United States of America cousins marry far more
frequently than in these countries. According to Dr
Morris, there were in the institution at Fanwood, a

* Man has not only his political and civil duties, but he has, moreover, his parental responsibilities; his union is not for a passing moment, or at hazard, as among animals, but it must occur under precise and regulated conditions.—*Aristotle.*

the close of 1860, 303 pupils, and 44 (that is 14½ per cent.) of these were the offsprings of consanguineous marriages. The latter class of children were from 37 families, in which there had been 165 births. He gives the following table of consanguineous marriages and their fruits:—

Class of Relationship.	Number of Families.	Number of Children.	Perfect.	Defective.
First Cousins	630	2,911	955	1,956
Second do.	120	626	360	266
Third do.	13	71	42	29
Double do.	27	154	21	133
Uncle & aunt } Nephew & niece }	12	53	10	43

Another evil, if I may so term it, is that the duration of life is much shorter in the deaf and dumb than the hearing. Of the 12,553 deaf mutes returned in 1851 for England, Scotland, and Wales, it was found that only 783 had reached the age of sixty years.*

Dr. Helsham, of Brixton, gives us the following interesting observations:—"If we take the number of deaf and dumb existing in Europe and examine into their condition, it will be found that nearly 30 per cent. originate from related parents; thus, from four asylums in France, where the numbers have been carefully registered and examined, we find at Bordeaux 30 in 100; Nogent-le-Rotrou, 29 in 100; Paris, 28 in 100; and at Lyons, 25 in 100. In these statistics the numbers are only entered upon conviction of the validity of the cause—the parents being well formed, in good

* One of the results of intermarriage is an intensification of any hereditary taint existing in the family.

health, and free from any deterioration of health that would indicate a liability to unhealthy offsprings. The frequency of these cases has a relative proportion to the degree of consanguinity of the parents. If one represents the liability of the birth of a deaf mute in ordinary marriages,

18 will represent it in Marriages between Cousins;
30 do. do. do. Uncles and Nieces;
70 do. do. do. Nephews and Aunts.

The great increase of the liability is remarkable in marriages between aunts and nephews, as nothing *à priori* would have indicated the result.

"In the United States, we find there the difference of social condition between the white and black races. Among the latter, marriages of consanguinity, to the closest degree, being frequent, the proportion becomes of a very high figure. The statistics were obtained from the Census prepared by the Legislature, and are as follows :—

States.	Whites.	Blacks.
Maine	1 in 2,252	1 in 104
New Hampshire ...	1 " 1,569	1 " 60
Vermont	1 " 2,157	1 " 363
Massachussetts ...	1 " 2,670	1 " 500
Ohio	1 " 2,687	1 " 526
Michigan	1 " 6,824	1 " 353
Indiana	1 " 2,285	1 " 478
Illinois	1 " 3,046	1 " 163
Iowa	1 " 4,292	1 " 47

Thus, in the State of Iowa, where the proportion of deaf and dumb in 10,000 of the population equals 2·3 in the white race, amongst the blacks the figure amounts to 212 in 10,000.

"In localities where natural obstacles, or where political opinions may have an influence in checking the mixture of families, we perceive the same facts expressed—a direct elevation of the numbers of deaf and dumb. Thus, taking 6 per 10,000 as the standard—

14 per 10,000 will be found in Corsica;
28 do. do. do. Canton of Berne;
11 do. do. do. Iceland.

Such is the effect in the aggregate, as derived from the careful digest of all the available figures." And Mr. Wilde, one of the Census Commissioners for Ireland, in his Report for 1851, states that dumbness prevails principally in the hilly and mountainous districts.

The following are the diseases most frequently observed, and to which mutes are peculiarly liable :— Scrofulous complaints, catarrhal attacks, phthisis, dyspepsia, bronchitis, diarrhœa, tabes messenterica, furunculus, and occasionally an inveterate form of scabies. Now, I have had a considerable amount of correspondence on this subject, the result of which I give in the following tabular form :—

Name of Institution.	Diseases most commonly met with.	Informant.
Old Kent Road Institution, London. Number of inmates educated during 72 years, 3,200; number of poor children yearly elected, 60 to 70.	Phthisis, cerebral diseases, and strumous tumefactions.	Taken from Mr. Hawkin's work.
British Asylum for Deaf and Dumb Females, Clapton, London. Yearly number of inmates (principally adults), 30.	Dyspepsia and asthenia.	Dr. C. D. Kingsford.

Name of Institution.	Diseases most commonly met with.	Informant.
Margate Branch Institution. Number of deaf and dumb children educated during three years, 58.	"This branch has been opened for three years and a-half, during which time the inmates have been remarkably healthy. There has been no epidemic; and the diseases have been those commonly met with among children in public institutions."	Dr. G. Hunter.
Manchester Institution.	"The diseases are for the most part those of debility, based mainly on the strumous diathesis of the deaf and dumb."	Thos. Turner, Esq., F.R.C.S.
Birmingham Institution.	"Strumous diseases are the most common; ten per cent. of the pupils suffer more or less from such diseases; also, catarrhal attacks, exenthamous affections, and occasionally scabies."	Dr. Wade.
Liverpool Institution.	"The ordinary diseases of childhood, with a considerable proportion of diseases of a strumous origin."	F. J. Bailey, Esq., M.R.C.S.
Bath Institution. Number of inmates during the year 1864, 41.	"None in particular; but I should say that they are not so strong or so equal to hard work as others. They have occasionally a hard and noisy breathing."	Dr. Hensley.
Newcastle-on-Tyne Institution. Yearly number of inmates, 74.	"During the twenty years I have had charge of this Institution, there have been amongst the pupils five deaths in the house,	William Neill, Principal.

Name of Institution.	Diseases most commonly met with.	Informant.
	viz.:—ene frem water en the brain, ene frem cholera, twe frem fever, and ene frem mesenteric disease. Twe have died at their ewn hemes; ene from consumptien, and ene frem water en the brain."	
Yerkshire Institutien, Doncaster. Number of yearly inmates, 118.	"The health of the children has been as geed as usual, except that a larger prepertien than in fermer years have been affected with cutaneeus diseases. Affectiens of the scalp and chilblains are cemmen."	Dr. Schelfield, and Report for 1864
Edinburgh Institutien.—Yearly number ef inmates, 66.	"Struma, diseases incidental te childheed, and in later years of life disease of the lungs."	Mr. Hutchinsen, Principal.
Glasgew Institutien.	"Strumeus diseases, skin diseases, especially parasitic skin diseases, are very cemmen."	Dr. M'Call Andersen.
Aberdeen Institutien.—Yearly number ef inmates, 22.	"Discharges frem the ears and swellen glands in the neck." (This evidently shews a strumeus diathesis.)	Dr. R. Dyce.
Dundee Institutien. Yearly number ef inmates, 24.	"Since I have been cennected with this Institutien there has been little er ne disease: twice a few cases ef measles. A girl died a few menths age frem acute cephalitis. I have observed a strumeus tendency in a geed many of the inmates."	Dr. Begg.

Name of Institution.	Diseases most commonly met with.	Informant.
Cabra Roman Catholic Institution, Dublin. Yearly number of inmates, 240.	"The pupils require better food and more generous treatment than any other children in a public institution, for they are more subject to disease, such as scrofulous swellings, consumption, ophthalmia, &c.; hence the low scale of dietary that might suit a Reformatory or a Workhouse would be the destruction of deaf-mutes."	Report of the Institution for 1864, kindly sent to me by the medical officer, Dr. T. Willis, jun.
Swansea Institution.	"Struma."	Mr. Hall, M.R.C.S.
Ulster Institution, Belfast. Number of deaf and dumb educated during last 19 years, 1,388; yearly number of inmates, 117.	"Strumous complaints, phthisis, ophthalmia, otorrhœa, catarrhal affections, and occasionally scabies."	Dr. C. D. Purdon.
Claremont Institution, Dublin. Yearly number of inmates, 95.	"There are always some of the pupils affected with scrofula—about two or three per cent. The health of the pupils has been remarkably good, and I think that this arises from the situation of the Institution and dietary. During ten years, there has been three deaths from heart disease, one from whooping cough, and several from phthisis. Many of the pupils have deficient sight. The health of the inmates has continued remarkably good; only one death has taken place during the year	Mr. Chidley Report for 1864: and Dr. Eustace, jun.

Name of Institution.	Diseases most commonly met with.	Informant.
	1864, that of a boy who died of disease of the brain. A few strumous cases are always in the house; now and then cerebral affections, and chilblains in winter."	
Exeter Institution. Yearly number of inmates, 64.	"No particular disease, except glandular swellings, with discharges from the ears."	Dr. Scott, Principal.
Brighton Institution.—Yearly number of pupils, 100.	"There is, undoubtedly, a delicacy of constitution among the deaf and dumb, but our pupils enjoy excellent health. The bracing air of Brighton suits them remarkably well."	Mr. W. Sleight, Principal.
Bristol Institution. Yearly number of inmates, 30.	"Scrofula, small pox, and brain fevor."	Mr. Jackson, Principal.

The situations of the different Institutions, and the internal and domestic management, must hold an important part towards the prevention of disease, and the following brief remarks may not be uninteresting.

The Manchester Institution is situated in a suburb a short distance from the city. The whole building consists of two wings—one for the blind, the other for the deaf and dumb. These are separated from each other by a beautiful chapel.

The London Asylum for the Support and Education of the Deaf and Dumb Children of the Poor was originally located at Bermondsey, but is now in the Old Kent Road, Surrey. The building is a large brick

edifice, comprising a centre pile and wings of a very unpretending appearance.

The Birmingham Institution has been greatly improved and enlarged, and occupies a healthy situation.

The Brighton Institution is most admirably located in the outskirts of the town, within a few hundred yards of the Downs, and only some perches from the shore.

The Institution at Doncaster has been re-built, and contains baths and wash-houses of a superior description.

The Newcastle Institution is a handsome Gothic building, situated on the North Road, and is in an open and airy situation. In the centre of the building is a handsome tower, from which wings extend on three sides. This building has accommodation for 100 pupils, and has an hospital attached to it, but entirely separated from any part occupied by the children. It contains three large rooms and a bath-room.

Donaldson's Hospital, at Edinburgh, for the Deaf and Dumb, is a magnificent looking building, and well suited to its object.

The Claremont Institution, at Dublin, is rather old-fashioned, situated in the country, and surrounded by trees; it, nevertheless, is very picturesque looking.

The Ulster Institution, at Belfast, is a large edifice surrounded by the grounds of the Institution. It is built of brick, faced with white sand-stone. A lofty tower occupies the centre of the building, and from which two wings extend—one for the females, Matron's apartments, kitchen, &c.; the other for the boys and Principal. A large and splendid new school-room is attached to the building.

It will be observed that the majority of the above Institutions are situated in suburbs, in good, healthy localities; and this is of more importance than is imagined, as a good, pure air, uncontaminated by the smoke, effluvia, &c., of large towns, tends to check any tendency to scrofula, and conduces not a little to the health of the pupils.

A disease rare in Ireland I find mentioned in the Medical Report Book of the Ulster Institution as having occurred in a few instances. I refer to Bronchocele, Goitre, or Derbyshire Neck. Now, I do not mean to enter into any theory of its being a disease peculiar in this part of Ireland to the deaf and dumb; but, bearing in mind the great liability of these children to scrofula, it may be owing to this cause, just in the same manner as in strumous subjects the different glandular bodies become affected. I am quite aware that in chronic cases the veins covering the bronchocele become varicose; but this likely arises from the pressure of the tumour on deeper vessels. Deaf-mutism is, to my mind, very closely allied to, and singularly parallel with, Cretinism. "Now, Cretins is a term applied to certain individuals who are usually subject to large fleshy excrescences on or around their necks, called *goîtres*. They are very common in the valleys of Switzerland, particularly in the Canton Valais. . . . They are often deaf and dumb, generally idiotic, and always very low types of humanity. Like Cretins, some of the deaf and dumb have been noticed to possess more or less deficient sense of smell and taste."[6] Dr. Guggenbühl, the founder of the Cretin Hospital, has remarked, that

both Cretenism and bronchocele prevail in the valleys where the population are scanty in number and intermarry frequently.

Purpura hæmorrhagica is another disease rather rare at present, but it has been found to occur amongst new arrivals at the Institution here.

Scrofulous affections manifest themselves nearly in the same manner as in other individuals, by enlargement of the lymphatic glands, especially of the neck; affections of the conjunctiva and edges of the eyelids; swollen lips, eruptions behind the ears, disorder in the bowels, protrusion of the abdomen, swelling of the joints, particularly of the knee, periosteal tumours, &c.

From a perusal of the statements of the Medical Officers attached to the various Institutions, and which I have preferred to give *verbatim*, it will at once be evident that strumous affections are very common, and the question naturally arises—Why are these children more subject to scrofula than others. This is a problem I do not attempt to solve, but shall leave it to those whose experience is more extensive than my own.* Some writers assert that deaf-mutism arises from consanguineous marriages, and by reason of this their offsprings are more liable to scrofula than others, but I think that consanguinity of parents as a cause of deaf-mutism is carried too far, for in Ireland the poorer classes have a decided objection, if not aversion, to marry any of their blood relations. We must, I think, attribute deaf-mutism, as well as the liability

* Dr. G. Lowdoll, Physician to the Brighton Institution, informs me that, from his own experience, gained by twenty year's practice, as a general rule the deaf and dumb children inherit a scrofulous constitution, but their health is usually good, at the Brighton Institution.

to struma, as mentioned in another place, to some peculiar "constitutional taint in one or both parents," and, at the present state of our knowledge, we cannot say whether this taint arises from consanguinity or not; for, although the theory of blood marriages and their results are quite feasible, still the proofs brought forward are only isolated examples. Mr. Carmichael has left it on record that frequent intermarriages are followed by a puny race, and by scrofula in some form or other, and animals degenerate when bred too closely; but, in the words of Dr. Copeland,[15] "as regards the human race, this point is not easily elucidated, as the evidence is not conclusive."

"Scrofula is as hereditary as any disease can be, that is to say, it is so as far as any particular kind of temperament or constitution can descend more or less completely from parents to children."—(Article, *Scrofula*, "Cooper's Surgical Dictionary.") Sir A. Cooper describes struma as a disease proceeding from congenital debility, which attends its whole course and imparts to it a peculiar character, rendering the various processes of inflammation in it slow and imperfect. Dr. Alison has stated that scrofulous diseases are more frequent in the inhabitants of large towns than in the agricultural population of any climate. This observation is true to a certain extent, still it is rather curious that all the inmates (with a few exceptions) of the Ulster Institution have been born and reared in country districts, and are still more liable to scrofulous diseases than others.

There seems to be some peculiar susceptibility of the respiratory mucous membrane in mutes to in-

flammations, and which often extends to the pulmonary substance, so that in catarrhal attacks the greatest caution and prompt treatment are necessary, as phthisis has frequently supervened upon a "common cold," no symptoms of this formidable disease existing previously. I am quite aware that this statement is contrary to the opinion of some authorities; indeed, the celebrated Louis, in his researches on phthisis,[16] page 499, states—"The influence of pulmonary catarrh on the development of tubercles does not appear to me to be more satisfactorily demonstrated than that of pneumonia, . . . consequently we cannot consider it as one of the effects of the latter affection (catarrh), or connected with it by any obvious tie." Phthisis often exists in an incipient form, and after some exciting cause runs its course rapidly. The following table of deaths from this disease, as having occurred in the Ulster Institution, may help to illustrate this subject; and I believe that I am correct in stating that they are not more than the average, children having this disease being sometimes sent home to their relations, as their education is necessarily interrupted:—

Year.	Mutes.	Deaths from Phthisis.	Year.	Mutes.	Deaths from Phthisis.
1864	117	—	1854	68	—
1863	105	1	1853	59	1
1862	102	3	1852	40	4
1861	105	1	1851	48	3
1860	99	2	1850	45	3
1859	94	3	1849	46	4
1858	91	3	1848	47	1
1857	83	3	1847	50	2
1856	73	2	1846	52	1
1855	64	2			

The following statement of the cases requiring medical treatment is taken from the Medical Report Book of the Ulster Institution. I have not been able to separate the blind from the deaf and dumb, but, as the number of both are given, a comparison can be drawn. Under scrofula all strumous complaints are classed. Usually diseases of a contagious nature are sent out to hospital.

During 19 years the number of deaf and dumb inmates has been 1,388, and of blind 288, of these during that time there have been attacked with

Scrofula, ...	70	Furunculus, ...	12
Phthisis, ...	54	Synocha, ...	5
Catarrh, ...	155	Small-pox, ...	2
Bronchitis, ...	34	Diarrhœa, ...	10
Dyspepsia, ...	41	Scarlatina, ...	36
Hooping-cough, ...	8	Icterus, ...	1
Bronchocele, ...	3	Pleurisy, ...	4
Typhus, ...	5	Pneumonia, ...	2
Purpura Hæmorrhagica,	4	Dysentry, ...	2
Hæmoptysis, ...	8	Stomatitis, ...	1
Favus, ...	5	Neuralgia, ...	1
Herpes, ...	11	Epilepsy, ...	1
Erysipelas, ...	7	Concussion of the brain,	1
Scabies, ...	100	Hydrocephalus, ...	2
Measles, ...	46	Gangrene of the lungs,	1

With regard to the frequency of chest affections, I think that the rainy and damp atmosphere of Belfast is probably an exciting cause.

CHAPTER V.

MEDICAL TREATMENT OF THE DEAF AND DUMB.

From what has been mentioned in the preceding chapter, it will be evident that scrofulous affections are the most common. These affections are best treated by careful dietetic management, and exercise in the open air; the medicinal agents that are most useful being cod liver oil and the syrup of the iodide of iron. Dr. Carpenter gives the following account of the *rationale* of cod liver oil:—"The remarkable power which cod liver oil has been found to possess of promoting the nutritent process in individuals labouring under tubereulous cachexia can scarcely be attributed to anything else than its furnishing an abundant supply of fatty matters in a form that renders them peculiarly easy of assimilation. Taking all these facts into account, we seem justified in accepting the conclusion, that in metamorphosis of the albuminous constituents of the blood into the organised tissues of which they are the proper pabulum, fat takes an essential part, and thus it comes to have a much higher place in the economy of the living system than has been usually assigned to it."*

Affections of the chest are of frequent occurrence, and towards their prevention, rather than cure, the

* Iodine exists in the proportion of one grain in a thousand of cod liver oil.

advantage of mutes inhabiting rooms of an equal temperature during Winter will at once be evident. At several Institutions the school-rooms, dormitories, &c., are heated by means of hot water, as at the Belfast, Doncaster, and Newcastle Institutions, and I have been informed that affections of the chest are diminishing in consequence.

We have often remarked phthisis to supervene after a slight catarrhal attack, and run its course rapidly. Little can be done for this affection, the treatment being the same as in others. If a child has a *cold* and is scrofulous, it is at once ordered a terebinthinate liniment to the chest, and in some cases croton oil, as the counter irritation produced by these remedies are of much service. Once consumption has commenced, I think that the treatment may be summed up in the words of the Arabian physician Avicenna, who prescribed "camphor lozenges, a dry air, and milk diet," to which I may add, external irritation to the chest, and the internal administration of cod liver oil, combined with a good, easily digested, and nutritious diet.

Otorrhœa is an affection very common amongst the deaf and dumb; and, from correspondence, I find it to be much more common at the Institutions in Great Britain than here. The disease usually arises in scrofulous subjects after scarlatina, and the discharge from the ear or ears is very offensive; if allowed to continue, caries of the petrous portion of the temporal bone takes place, death eventually arising from inflammation attacking the membranes of the brain, and which may extend to the brain substance itself,

coma being usually present for a few hours before death. I do not know of any remedy so useful in this affection as the following, and which has been recommended by Bateman :—

Balsami Peruviani, ... drachmas duas;
Fellis Bovinae, ... unciam.
Signatur—A little to be dropped into the ear occasionally.

This remedy destroys the offensive smell of the discharge, and eventually checks it. Of course, constitutional remedies, as quinine and cod liver oil, are to be administered. In severe cases, a blister applied over the mastoid process, and which may be kept open by savin ointment, will prove useful.

Scrofulous ophthalmia is a common affection during Winter and Spring, and it also frequently arises from some of the exanthemata occurring amongst children. As is well known, one of the principal symptoms is great intolerance of light.

In the deaf and dumb the first thing to be done is to commence treatment with some alterative powders; say, consisting of pul. rhei., hyd. c. cretæ, and sodæ siccat., after which cod liver oil and quinine should be prescribed. On the first symptoms of this affection a drop or two of a solution of the nitrate of silver (ten grains to the ounce) should be applied, and if the disease does not appear to yield in a few days, the proportion of the salt may be increased; also, a blister is to be applied behind the ear or at the nape of the neck, and which can be kept running. A green shade should always be worn during and even after the disease has ceased.

Exanthematous affections require a stimulating plan of treatment, and during their continuance the con-

dition of the lungs need special care and attention. No plan of treatment answers better for scarlatina than the carbonate of ammonia and beef tea, recommended in the medical journals some years ago; and when any symptoms of debility become apparent, stimulants are necessary. When scabies breaks out in any of these Institutions it spreads with great rapidity amongst the inmates, and is more difficult to cure than amongst other individuals. As regards internal treatment, sulphur in some form or other is useful, for the reason that this substance is partly eliminated by the skin; but it is more valuable when used externally, and for this purpose an ointment consisting of tar, soft soap, sulphur, and prepared chalk, seems to be the best; applied at night, and washed off the next morning with black soap.[17] Baths containing the sulphuret of potassium are also very useful.

As it would be unnecessary to enter into a description of the medical treatment required in other diseases, and to which the deaf and dumb are more or less liable, I shall only offer a few suggestions regarding their management:

1.—In all diseases occurring in mutes, prescribe a stimulating plan of treatment, keeping up the strength as much as possible.

2.—All depressing remedies are usually injurious.

3.—Great attention should always be paid to the state of the digestive organs, as sudden derangements of the stomach and liver are apt to occur.

4.—Affections of the chest are apt to supervene from the slightest cause, frequently phthisis.

5.—A flannel or chamois leather waistcoat ought to be worn next the skin, especially during Winter.

6.—When called on to administer expectorant remedies, give those of a stimulating rather than depressing kind.

7.—Stimulants, both medicinal and dietetic, are very useful.

8.—Tonics, as the light vegetable and iron preparations, are of much value, especially during the period between the decline of the disease and convalescence.

Nitrogenous medicines, which supply the waste of muscular tissue, and which render the blood normal, are of great service, especially in disease of a low type and nervous affections.

CHAPTER VI.

SANITARY MANAGEMENT.

The Dormitories should be well ventilated and have a hearing person sleeping in them, so that in the case of illness or accident assistance could at once be procured.

Moderate gymnastic exercise is very useful towards developing the weak and soft muscles these children usually have; and the Committee of the Institution at Belfast have established a capital gymnasium for the boys, and by exercise therein their physical health is greatly improved. A gymnasium is also attached to the Edinburgh Institution, and in the Summer months the pupils are drilled by a sergeant employed for that purpose. "Gymnastic Physic was inculcated as a useful branch of the healing art by the earliest physicians. Esculapius ordered some to ride on horseback, and to exercise themselves in the arms, and he showed them the several sorts of motions that they were to express and after what manner they were to be armed."[18] Dr. Copland states that muscular power may exist in a very marked degree in the scrofulous diathesis, as this power is generally developed by exercise and air, but seldom so enduring or so capable of being excited for as long a time as in healthy constitutions.

Baths occasionally are highly beneficial, and, combined with brisk friction, conduce not a little to

health. At the Claremont Institution each inmate has once a week a cold plunge bath; and in other institutions a warm bath each week is compulsory.

The inmates of the Ulster Institution retire to rest at eight o'clock, and rise at six o'clock, A.M. After school hours walks into the country or to the Botanic Gardens are indulged in. Cricket and other out-door games are allowed in fine weather. In the majority of these Institutions the inmates all rise at six o'clock, A.M. Breakfast at 8 o'clock, dine at either 12, 1, or 2 o'clock, supper from 5½ to 7 o'clock; the duration of school hours on an average being about 8 hours.

To obtain a pupil's admission into any of these Institutions there are a set of questions to be answered by the parents or guardians of the applicant, and it is a great pity that an uniform series of queries could not be adopted at each Institution, the Principal or Secretary of each sending returns to one of the medical journals for publication, say at the end of every year. By this means valuable information would, in the course of time, be obtained. After looking over the various rules of admission of the different Institutions, I would suggest the following set of queries:—

QUESTIONS

To be answered by the Parents or Guardians of the Applicant, and attested by a Medical Practitioner:

1. Name of child?
2. Age and sex?
3. Occupation of parents?
4. Where do they reside? (The geographical position of the locality should be stated.)

5. Has the applicant had the usual diseases of childhood? If so, state them.
6. Was the child born deaf, or at what age and by what disease did it become deaf?
7. Do the other senses seem perfect?
8. Is the child apparently healthy?
9. Does it appear to be strumous?
10. Are any other members of the family deaf and dumb?

What is the state of

11. The brain and nervous system, as regards memory, &c.?
12. The lungs?
13. The heart and circulating system?
14. The digestive organs?
15. Are the parents related? If so, state tho degree of relationship.

It has been remarked at the Ulster Institution that the deaf and dumb when confined to the house, say from wet weather, in one room, even when large and well ventilated, emit a very peculiar *heavy* smell. Now, these children do not perspire more than others, so that it cannot be caused by immoderate sweating, and as their clothes are frequently changed, as well as the use of baths insisted on, it cannot be ascribed to neglect from this cause. Latterly this odour which I have mentioned is not so often experienced, as tho system of ventilation is of a first-class order.

Now, this smell must be owing to some peculiar matter which is constantly omitted by the skin, and this matter must differ somewhat either in quantity or

property. Dr. Carpenter, in his work on physiology, states, that "the skin is the seat of the various secretions, and for each of which it is provided with special organs, and the only one that can be looked on as excrementitious is the transpiration of aqueous fluid holding certain matter in solution, this secretion may be either sensible or insensible. On being analyzed it is found to contain acetic acid, urea, chloride of potassium and sodium; these are usually present; whilst muriate of ammonia, alkaline phosphates, free acetic, and butyric acids are said to occur in it occasionally." The amount of fluid lost by insensible perspiration, according to Seguin, is 11 grains every minute, but it varies according to the state of the atmosphere. Mr. E. Wilson[19] gives the following analysis, by Anselmino, of the dried residue of the perspiratory secretion :—

Matters insoluble in water and alcohol, chiefly calcareous salts, ...	2
Animal matter soluble in water, insoluble in alcohol, regarded by Anselmino as salivary matter, and sulphates, ...	21
Matters soluble in dilute alcohol, chloride of sodium, and osmazome, ...	48
Matters soluble in alcohol, osmazome, and lactates, ...	29
	100

Out of all the answers returned to my queries, only four gentlemen have recognised the smell to which I have referred. Dr. Hensely (Bath) states — "Not generally; in one or two instances there has been a peculiarly fetid odour, but I have occasionally observed the same in other children." Mr. Bailey's (Liverpool) account comes nearer the point: he says —"Not when assembled together, but after morning school, in a large and well ventilated school-room,

there is a very peculiar smell left behind." Again, Mr. Hutchinson (Head Master of the Edinburgh Institution) — "Yes; more especially from those who have lost their hearing during childhood from disease, say scarlet fever;" and he does not refer to any discharge from the ears, so that I take it for granted the smell does not arise from that cause. And, lastly, Dr. Wade (Birmingham) writes me—"I have never perceived any smell peculiar to deaf and dumb children; but some time since, when our rooms were smaller than they are now, they used to become very offensive; some of the children suffering from scrofula emit the smell peculiar to that disease."

I think that the cause of this smell is worthy of further investigation, particularly by those who devote their time to the study of chemistry.

CHAPTER VII.

DIETETIC MANAGEMENT.

The dietetic management of mutes is a very important subject, and experience proves that their food should be of a plain, wholesome, easily digested character, and of a solid, rather than fluid, description. A mixed diet containing a large proportion of easily assimilated farinaceous materials seems to be the best. In some of the English Institutions children who are delicate have beer to dinner, as, for instance, at Birmingham. The Report of the Deputation to the British Institutions for Deaf and Dumb, by Dr. Ringland and Mr. Gelston,[4] contains the following on this subject:—"We observed that the dietary throughout all the schools was very good. In almost all, the pupils are provided with meat at dinner on at least four days a-week, while in some they have it on five days, and in London on every day; besides this, they get a liberal supply of soup. Puddings made with suet, rice, preserves, or fruit constitute likewise a considerable portion of their dinner. For breakfast they have in some places bread and milk, in others milk with bread, and in others the ordinary stirabout and milk. Their suppers are much the same, but in some Institutions bread and cheese, or bread and treacle, are substituted.

"We are of opinion that the deaf and dumb require good generous diet; but, at the same time, it is

equally important to be borne in mind that over-feeding is highly injurious. Without entering into details, we would merely express our conviction that a constant variety in their diet would be found conducive to the maintenance of their health. We would prefer a small quantity of meat, together with a little soup, on four days in the week, to double the quantity of either on but two days each week. We would recommend the frequent use of a moderate quantity of well-cooked vegetables, but do not approve of potatoes for constant use; as an occasional change, however, they are not objectionable. Rice in every variety of cooking constitutes, as we think, a most admirable article of diet; while we believe oatmeal ought to be but sparingly used. Puddings are, in our opinion, not suitable food for the deaf and dumb; but bread and milk, alternated with rice and milk, or an occasional change to stirabout and milk, will, according to our experience, be found wholesome diet for them; but we cannot in any way approve of their using cheese."

As mentioned in a former chapter, scrofulous complaints are the diseases most commonly met with. A diet with the object of obviating any tendency to strumous affections would be very desirable, and the following plan of diet, as used at the Ulster Institution, I published in the *Dublin Quarterly Journal of Medicine* for May, 1865 :—

"For several years various plans of treatment had been tried for the purpose of preventing the ravages of scrofula, but without any success. In the year 1862, it was determined to try linseed in the manner hereafter mentioned, it being well known to contain a

largo amount of oil and exeellent nutritive matter for producing fat, as is to be seen in eattlo fed on this substance.

"In the year 1862, as before mentioned, linseed was first used as a dietetic agent, combined with bran. Now it has been estimated that as much as twelve per cent. of nutritious matter is contained in bran, and this matter is commonly called by Chemists gluten; but M. Mége, Mouries, has found this substance to consists of a vegetable ferment or metamorphic nitrogenous substance, and which he has named *cerealin*, and another vegetable substanee called *casein*.

"Cerealin, which I may eall the active principle of bran, is obtained by washing bran with cold water, in which fluid it readily dissolves and may be precipitated by alcohol. As contained in bran it is an active ferment on starch and glueose, produeing the laetic and butyric changes, but never alcohol.

"This substance, then, being a special solvent of starch and gluten as contained in flour, and a good tonic, as also stimulant to weakened digestion, in increasing to a remarkable extent the dissolving properties of pepsine, was on aeeount of these reasons eombined with linseed, as in the following formula. For one quart of the soup—Take of Linseed, half-an-ounce; fino bran, ono ounce; water, one quart—boil for two hours and strain, then add beef from half-a-pound to a pound, and make into a soup, with vegetables, &c.*

"This soup is given at dinner, four days in the

* This compound is extremely palatable, and I can testify to its excellent qualities, having tasted it on several occasions.

week, to all the pupils; and since its use began, chest affections and dyspeptic attacks have not been so frequent as formerly."

Another excellent article of diet, but rather expensive for every day use, is arrow-root, which is obtained from the Maranta Indica (a native of the East Indies, but cultivated in the West Indian Islands.) The substance used as a dietetic agent is the fecula of the tubers, its chemical composition being $C_6 H_5 O_5$. Now it appears that all amylaceous substances, when taken into the animal economy, go to form fat and produce animal heat, by means of the consumption of the carbon and hydrogen that they contain; and arrow-root being one of the richest and most nutritious of the starchy substances, it will be evident that in diseases accompanied by much emaciation it will prove very serviceable.

I shall now give the dietaries of the different Institutions :—

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
Ulster Institution, Belfast.	Milk & Stirabout.	Sunday—Meat & potatoes. Monday — Soup, containing the essence of the linseed and bran. Tuesday — Rice & milk. Wednesday—Soup, as on Monday. Thursday—Meat and potatoes. Friday—Same as on Monday. Saturday—Do.	Bread and Milk.	Rev. John Kinghan.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
Manchester Institution.	Bread and Milk.	Sunday — Suet pudding, with currants and treacle. Monday — Boiled meat and potatoes. Tuesday — Broth, rice, pudding, and bread and cheese. Wednesday — Meat & potato pie Thursday — Roast meat and potatoes, with plenty of gravy. Friday — Potato hash. Saturday — Roast meat, and potatoes with gravy. N.B.—Any vegetable in season in addition to potatoes.	Boiled milk & bread (butter twice a week.)	T. Turner Esq., F.R.C.S.
Cabra Institution, Dublin.	Bread & Milk, or Stirabout.	Sunday — Bread, meat, and vegetables. Monday — Bread and broth. Tuesday — Same as on Sunday. Wednesday — Same as Monday. Thursday — Same as Tuesday. Friday — Bread & butter, fish, eggs, and vegetables.	Bread and milk.	Report for 1864.

Name of Institution	Breakfast.	Dinner.	Supper.	Informant.
		Saturday— Bread & broth. N.B—For lunch, bread.		
London Institution.	Bread, Butter & Milk.	Daily— Meat (beef or mutton), potatoes, puddings, bread, ale; and for delicate children, porter; soup twice a-week during winter months and peas, cabbage, and lettuce in the season.	Bread and milk.	Report of Dr. Ringland and Mr. Gelston.
Liverpool Institution.	Sunday— Boiled Bread & Milk. Monday—do. Tuesday — Oatmeal porridge and milk. Wednesday same as Sunday. Thursday—do. Friday same as Tuesday. Saturday same as Sunday.	Sunday: Cold beef and potatoes. Monday: Rice pudding. Tuesday: Meat and potato pie. Wednesday: Baked meat and potatoes. Thursday: Batter pudding. Friday: Hashed meat and potatoes. Saturday: Fried meat and potatoes.	Boiled bread and milk.	J. F. Bailey, Esq., M.R.C.S.
Birmingham Institution.	Bread and Milk.	Sunday: Boiled beef, with vegetables. Monday: Stew and rice. Tuesday: Boiled beef with ve-	Bread and cheese, or bread and treacle, or bread and dripping.	Mr. A. Hopper, Principal.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
		getables. Wednesday : Roast beef and mashed potatoes, and suet pudding. Thursday : Stew and rice. Friday : Roast mntton, potatoes, and vegetables. Satnrday : Roast beef and mashed potatoes.		
Margate Institution.	Bread, Butter & Milk, occasionally Cocoa.	Mutton or beef, with potatoes and suet pnding.	Bread and butter and milk, or cocoa.	Dr. G. Hunter.
Bath Institution.	Cocoa and Bread, (Butter on Sunday).	Sunday : Cold meat, potatoes, & vegetables. Monday : Hot meat, potatoes, and rice. Tuesday : Do. Wednesday : Soup, bread, & potatoes. Thursday : Same as Monday. Friday : Eggs & bacon in Summer; meat in Winter. Saturday : Thick rice, milk, and bread.	Sunday : Tea and bread and butter. Other days Milk, bread and treacle, or bread and cheese.	Doctor Hensley.
Doncaster Institution.	Bread and Milk.	Meat dinner six days in the week.	Bread and milk.	Dr. Scholfield.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
Glasgow Institution.	Porridge & Milk.	Sunday: Beef & potatoes. Monday: Pea-soup & bread. Tuesday: Barley broth with vegetables and bread. Wednesday: Beef & bread. Thursday: Pea-soup & bread. Friday: Barley broth & bread. Saturday: Fish and potatoes.	Porridge & milk.	Mrs. Kinniborough, Matron.
Newcastle Institution.	Oatmeal porridge & milk (Sunday Bread & Milk.)	Sunday: Roast meat, potatoes, & vegetables. Monday: Suet pudding, with treacle. Tuesday: broth and bread. Wednesday: Beef & potatoes Thursday: Same as Tuesday. Friday: Same as Wednesday. Saturday: Fish or bacon, or rice and milk, with potatoes.	Bread and milk. Sunday: Coffee, bread and butter.	Mr. Neill, Principal.
Exeter Institution.	Bread and Milk.	Sunday: Meat & vegetables. Monday: Soup & vegetables. Tuesday: Meat & vegetables. Wednesday: Do. Thursday: Pudding, or soup and bread.	Bread and milk.	Dr. Scott, Principal.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant
		Friday: Meat & vegetables. Saturday: Rice, or meat pudding.		
Edinburgh Institution.	Porridge & Sweet Milk.	Sunday: Rice & milk. Monday: Broth and bread. Tuesday: Pea-soup & bread. Wednesday: Same as Monday. Thnrsday: Same as Sunday. Friday: Same as Monday. Saturday: Same as Wednesday.	Bread and sweet milk.	Mr. Hutchinson, Principal
Aberdeen Institution.	Porridge & Sweet Milk.	Sunday: Bread & milk boiled. Monday: Barley broth & beef or mutton, and bread. Tuesday: Milk, broth, & bread. Wednesday: Potatoes, soup, and bread. Thursday: Beef or mutton and bread. Friday: Milk, broth, & bread. Saturday: Pea-sonp & bread. N.B. — Fish in season.	Porridge & milk; and on Snnday tea, bread & syrup.	Dr. Dyce
British Asylum for Deaf & Dumb	Coffee with bread & butter.	Beef or mntton, with vegetables and pud-	Tea and bread and butter.	Dr. Kingsford.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
Females, Clapton, London.		ding, occasionally soup.		
Bristol Institution.	Boiled milk and bread thickened with oatmeal.	Sunday: Boiled meat & vegetables. Monday: Irish stew, made of remainder of the meat of preceding day and the fluid in which it was boiled. Tuesday: Baked or roast meat, potatoes and bread. Wednesday: Suet pudding. Thursday: As on Sunday. Friday: As on Monday. Saturday: Rice, with milk and bread.	Bread and cheese, coffee or cocoa.	Mr. Jackson, Principal.
Claremont Institution, Dublin.	Sunday, Monday and Thursday —boiled rice & milk. Tuesday & Saturday — stirabout and milk. Wednesday and Friday—bread and milk.	Sunday: Bread and milk. Monday: Beef & vegetables, with bread. Tuesday: Do. Wednesday: Soup & bread. Thursday: Same as on Monday. Friday: Same as Tuesday. Saturday: Same as on Wednesday.	Bread and milk.	Mr. Chidley, Principal.
Brighton Institution.	Porridge & milk.	Mutton, beef, vegetables, pud-	Bread and milk.	Mr. Sleight Principal.

Name of Institution.	Breakfast.	Dinner.	Supper.	Informant.
		dings, &c., &c. No fixed dietary.		
Swansea Institution.	Warm milk with bread & sugar.	Sunday, Monday, Wednesday, and Friday: Meat, potatoes, and bread. Tnesday: Plnm-pndding. Thnrsday: Soup and bread.	Milk and bread.	Mr. Hall, M.R.C.S
Dundee Institution.	Porridge & milk.	Broth and pea-sonp in Winter; in Snmmer, rice and milk, bread & beef, three times each week.	Porridge & milk; and, at bedtime a piece of bread.	Dr. Begg.

In the majority of these Institutions the pupils have a piece of bread or a biscuit about four o'clock.

I shall not offer any comment on the above dietaries, but shall merely remark that, according to Dr. Mayer, of Berlin, the milk of stall-fed cows is frequently acid; and, as the milk obtained in large towns is usually procured from this source, the use of lime water, or calcined magnesia, will often be necessary. And, again, a Dr. Klencke, of Leipzic, has stated, as well as Dr. Carswell, that stall-fed cows are liable to become tuberculous, and he found, under these circumstances, that their milk loses much of its sugar, and that the butter and casein diminish, while the albumen is found sometimes as high as 15 per cent.,

elain in the proportion of 1.4 per cent.; so that the milk of stall-fed cattle is hardly adapted as an article of diet for children so extremely subject and liable to scrofula as the deaf and dumb. Indeed, the nutritive properties of milk depend on the casein, butter, and sugar of milk, contained in it. Nor as a substitute do I suggest tea, as it occasions derangement of the digestive organs, giving rise to dyspeptic attacks, to which deaf-mutes are rather liable. The tannin contained in tea acts also on the teeth, forming a tannate of lime which is very soluble, thus leading to decayed teeth. To my mind,

> "The drink that invigorates,
> But not inebriates,"

is very unsuitable as a dietetic agent for young persons, cocoa being more nutritious.

In proposing a dietary three things have to be taken into consideration:—1st. As to its nutritive properties. 2nd. Its economy. And, 3rd. That it may be palatable and pleasant to take. Persons affected with strumous diseases require a full stimulating diet, and this is the kind necessary for the deaf and dumb. The principal ingredients in the diet-scales of the Institutions already mentioned are soups, puddings, and bread and milk.

Dr. Beddoe, in an interesting paper on hospital dietaries, in the *Dublin Quarterly Journal of Medical Science*, for August, 1865, gives the following table of the standard composition of food, and which will be very useful as a reference towards either altering any of the existing dietaries, or in making a new one:—

	Nitrogenous.	Fatty.	Amylaceous.	Indig. or complem.	Mineral.	Water.
Bread, ...	8.5	1.	52.	1.	1.5	36.
Wheaten flour, ...	12.	1.25	72.	1.	1.	12.7
Oatmeal, ...	16.5	6.	60.	2.5	2.5	12.5
Rice, ...	6.5	.5	80.	1.	.5	11.5
Barley.	9.	1.	75.	1.5	1.	12.5
Peas, ...	22.5	2.	50.	9.	2.5	14.
Potato, ...	1.75	...	17.5	4.5	1.25	75.
Do., cooked and skinned, ...	2.	...	20.	2.75	1.25	74.
Carrot, ...	1.5	.2	8.5	3.5	1.3	85.
Meat, cooked and boneless, ...	25.	20.	...	...	2.	53.
Do., with bone, ...	20.	20.	...	13.		47.
Bacon, ...	8.	75.80	...	...		
New milk, ...	4.	3.5	4.5	...	.5	87.5
Skimmed milk, ...	4.	.5	4.5	...	.5	90.5
Suet, ...	1.	95.	...	...		4.
Sugar (common), ...	1.	...	92.	...	1.	6.
Cocoa, ...	10.	50.	20.	...	...	....

It is but fair to mention that Dr. Beddoe includes several other articles of diet in his table, but I have merely extracted those most frequently used.

PROPOSED DIET.

Day.	Breakfast.	Dinner.	Supper.
Sunday.	Cocoa, ½ pint; bread and butter.	Beef, ¼lb., and potatoes.	Cocoa and bread.
Monday.	Do., without butter.	Soup, one pint; consisting of the essence of linseed and bran, and bread.	Milk and bread.
Tuesday.	Arrowroot and milk.	Stew, with potatoes.	Do.
Wednosday.	Milk and stirabout.	Beef or mutton and potatoes.	Do.
Thursday.	Cocoa and bread.	Soup, as on Monday.	Do.
Friday.	Arrowroot and milk.	Rice, milk, and bread.	Do.
Saturday.	Stirabout and milk.	Soup, as on Thursday.	Do.

The above diet would be as cheap, if not cheaper, than some of those at present used. Beer, porter, &c.,

to be given when ordered by the medical attendant. Puddings, being indigestible, are omitted. Dr. J. Eustace, jun., the Medical Officer of the Claremont Institution, Dublin, informs me that a generous diet, good ventilation of the dormitories, exercise in the open air, baths, and cleanliness have been, in a great measure, the means whereby the inmates of that Institution have been free from epidemic influences for some years past.

From the preceding it is evident that the dietetical regimen is of considerable importance, and, when consisting of a due proportion of animal food, tends greatly towards preventing the development of scrofula.

CONCLUSION.

The following Statistical Tables of the Number of Deaf and Dumb in England, according to the last Census, is taken from a pamphlet by the Rev. Alfred Payne[20]:—

	No. of Deaf and Dumb.
Metropolitan District, ...	1,819
Middlesex (extra Metropolitan)	132
Surrey do., ...	145
Kent do., ...	258
Sussex, ...	274
Hampshire, ...	228
Berkshire, ...	118
Hertfordshire, ...	117
Buckinghamshire, ...	98
Oxfordshire, ...	112
Northamptonshire, ...	122
Cambridgeshire, ...	107
Gloucestershire, ...	303
Staffordshire, ...	420
Worcestershire, ...	291
Warwickshire.	305
Leicestershire, ...	144
Lincolnshire, ...	208
Nottinghamshire, ...	175
Derbyshire, ...	235
Cheshire, ...	248
Lancashire, ...	1,334
Yorkshire (West Riding).	878
Do. (East Riding), ...	143
Do. (North Riding).	101
Dorsetshire, ...	134
Devonshire, ...	421
Cornwall, ...	274
Somersetshire, ...	345
Wiltshire, ...	155

The condition and treatment of these afflicted ones becomes a matter of considerable moment, and the following list of those who have advocated the claims of the deaf and dumb, by their intellectual labours, practical teaching, and literary contributions, is partly arranged from a paper sent to me by Mr. J. Bird, of London :—

Ponce, Pedro (born 1530), Old Castile, a Benedictine : the first teacher of *Acquired Articulation.*

Bonnet, John Paul, Castile, an Ecclesiastic: published, 1620, a work on *Acquired Articulation.*

Bulwer, John, M.D.: published, 1644, *Chironomia,* and, in 1648, *Chirologia.*

Holden, Rev. W., Canon of St. Paul's: published, 1659, a work on *Acquired Articulation.*

Dalgarno, George (born in Aberdeen), thirty years Schoolmaster at Oxford: published, 1661, *Didascalacophus.*

Wallis, Rev. John, Professor of Geometry at Oxford : wrote on and taught *Acquired Articulation.*

Amman, John, M.D. (born at Schaffhausen): published, at Amsterdam, 1692, in Dutch, and, in 1702, in Latin, *Surdus Loquens Seu Dissertatio de Loquela.* (A Guide to *Acquired Articulation.*)

Braidwood, Thomas : opened the First School for the Deaf and Dumb at Edinburgh, 1760, and at Hackney, where he taught till his death, 1806.

De l'Epée, Abbe (born, 1712, at Versailles) : opened the First School at Paris, 1760.

Sicard, Abbe (born, 1742), Assistant to De l'Epée : opened the First School at Bordeaux, 1786.

Watson, Joseph, LL.D. (born, 1764, at Edinburgh), nephew to Braidwood: opened a School for the Deaf and Dumb at Hackney, 1784; Superintendent at the School Old Kent Road from its opening 1792, till his death, 1829.

Orpen, C. H., M.D.: during illness educated a deaf and dumb boy, and by his lectures and published works awakened Ireland to its duty and to the establishment of the Claremont Institution, Dublin.

Rodenbach, Alexander: blind from his twelfth year; for twenty years Member of the Belgian Chamber of Deputies; introduced and secured the enactment of a law for the universal education of the deaf and dumb and the blind of that country, March 30th, 1836.

Carton, Abbe: author of many works on the education of the deaf and dumb, and Principal of the Institution at Bruges.

Valleroux, Dr. Hubert (Paris), and Blanchet, Dr. (Paris): both authors of works on the deaf and dumb.

From an attentivo perusal of the preceding pages, I think tho reader will come to the conclusion that much more, in a medical point of view, can be done for the deaf and dumb than is at present attempted. Considoring them in their present state, one may say with Cowper—

> "A dire effect, by one of Nature's laws,
> Unchangeably connected with its cause."

Combo, in his "Constitution of Man," well remarks, that "it may bo objected to the laws of hereditary

transmission of organic qualities, that the children of a blind and lamo father have sound limbs and eyes; but these defects are the results of accident or disease, occurring either during pregnancy or posterior to birth, and are seldom or never operations of nature. . . . If the father, for instance, be blind or deaf, the mother is generally free from that imperfection, and her influence naturally extends to and modifies the result in the progeny."

My object in writing this short and imperfect treatise has been to open up, to my mind, a new field for medical and scientific research, and, lastly, philanthropic. "Thou man alone can speak; wonder at thy glorious prerogative; and pay to him who gave it thee, a rational and welcome praise; teaching thy children wisdom, and instructing the offsprings of thy loins in piety."—(Translated from an Indian Manuscript of an Ancient Bramin: Dublin, 1749.)

LIST OF WORKS REFERRED TO:

1. Meliora: A Quarterly Review of Social Science. S. W. Partridge, London.
2. Social Pathology: The Blind and the Deaf and Dumb. By John Bird, M.R.C.S. Ward & Lock, London, 1862.
3. An Enquiry into the Cause of Deaf-Muteism. By W. Parker, M.R.C.S. Bath, 1856. (Pamphlet.)
4. Report of a Deputation to British Institutions for the Deaf and Dumb. By Dr. Ringland and Mr. Gelston. J. Charles, Dublin, 1856.
5. Blackwood's Magazine. September, 1857.
6. Constitution of the Deaf and Dumb. By James Hawkins. Longman, Green, & Longman, London, 1863.
7. Dictionary of Practical Surgery. By Samuel Cooper. Longman & Co., London.
8. Silence. By Edward Glynn. M. & M. W. Lambert, Newcastle-on-Tyne, 1859. (Pamphlet.)
9. Diseases of the Ear. By J. Toynbee, F.R.C.S. Churchill & Sons, London.
10. Kramer on Diseases of the Ear. New Sydenham Society.
11. Essai sur les Maladies de l'Oreille Interne. M. Saissy. Paris, 1827.
12. Principles of Human Physiology. By W. B. Carpenter, M.D. Churchill & Sons, London.
13. The Evils Resulting from the Intermarriage of Relations. By Hector Helsham, M.D. W. H. Collingridge, 1863, London. (Pamphlet.)
14. Constitution of Man. By George Combe. W. & R. Chambers, Edinburgh, 1836.
15. On Consumption and Bronchitis. By J. Copeland, M.D. Longman, Green, & Longman.
16. Researches on Phthisis. By M. Louis. New Sydenham Society.
17. Parasitic Diseases of the Skin. By T. M'Call Anderson, M.D. Churchill & Sons, London, 1863.

18. Diseases of the Heart. By J. Wardrop. Churchill & Sons, London.

19. Diseases of the Skin. By Erasmus Wilson. Churchill & Sons, London.

20. The Education of the Blind and the Deaf and Dumb: A Lecture. By the Rev. Alfred Payne. John Phillips, Manchester, 1864.

Also, the following Reports:

Report of the Ulster Institution, Belfast.
Do. Claremont Institution, Dublin.
Do. Edinburgh Institution.
Do. Newcastle-on-Tyne Institution.
Do. Bath Institution.
Do. Doncaster Institution.
Do. Aberdeen Institution.
Do. Exeter Institution.
Do. Dundee Institution.
Do. Bristol Institution.
Do. British Asylum for Deaf and Dumb Females, London.
Do. Cabra Institution, Dublin.